

10  
PUBLIC HEALTH ACT.

(11 & 12 Vict., Cap. 63.)

R E P O R T

TO THE

GENERAL BOARD OF HEALTH,

ON A

PRELIMINARY INQUIRY

INTO THE SEWERAGE, DRAINAGE, AND SUPPLY OF  
WATER, AND THE SANITARY CONDITION  
OF THE INHABITANTS

OF THE BOROUGH OF

WOLVERHAMPTON,

AND THE TOWNSHIPS OF

BILSTON, WILLENHALL, AND WEDNESFIELD.

By ROBERT RAWLINSON,

SUPERINTENDING INSPECTOR.



L O N D O N :

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FOR HER MAJESTY'S STATIONERY OFFICE.

1849.

## NOTIFICATION.

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THE General Board of Health hereby give notice, in terms of Section 9th of the Public Health Act, that on or before the 24th July, written statements may be forwarded to the Board with respect to any matter contained in or omitted from the accompanying Report on the Sewerage, Drainage, and Supply of Water, and the Sanitary Condition of the Inhabitants of the Borough of WOLVERHAMPTON, and the Townships of BILSTON, WILLENHALL, and WEDNESFIELD, or with respect to any amendment to be proposed therein.

By order of the Board,

HENRY AUSTIN, *Secretary.*

*Gwydyr House, Whitehall,*

*21st June, 1849.*

## PUBLIC HEALTH ACT (11 and 12 Vict. cap. 63)

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*Report to the General Board of Health on a Preliminary Inquiry into the Sewerage, Drainage, and Supply of Water, and the Sanitary Condition of the Inhabitants of the Towns of WOLVERHAMPTON, BILSTON, WILLENHALL, and WEDNESFIELD, all situated within the Union of Wolverhampton.*

*London, June, 1849.*

MY LORDS AND GENTLEMEN,

THE Corporation of Wolverhampton having forwarded a petition to the General Board of Health from that town, signed by more than one-tenth of the rated inhabitants, by your instructions, due notice was given as required by the Public Health Act, to make the inquiry throughout the whole of the Union of Wolverhampton, in which are situated the towns of Wolverhampton, Bilston, Willenhall, and Wednesfield; and on Monday, February 5th, 1849, at 10 o'clock in the forenoon, I commenced the inquiry in the public room of the town-hall, Wolverhampton, and examined witnesses with respect to the several matters named in the notices, and made a personal inspection of the surrounding district, and beg respectfully to submit this as my Report on the same.

FORM OF APPLICATION from the TOWN COUNCIL and the RATE-PAYERS to have the Inquiry instituted preliminary to the application of the Act.

“The number of inhabitants rated to the relief of the poor within the municipal borough of Wolverhampton is 9,453.

“That the number of your petitioners is 1,014.

“That your petitioners earnestly and respectfully request the General Board of Health to direct a Superintendent Inspector to visit this borough, and make the inquiries and report directed by the said Act of Parliament, with the view that such Act may be forthwith applied to and put in full force and operation within this borough.”

Adjourned meetings were held in the several towns at the request of some of the inhabitants, or parties representing them, of which due notice was given, by advertisement and otherwise, at Bilston on Thursday, February 8th; at Willenhall, Friday, the 9th; and at Wednesfield on Saturday, the 10th, 1849. There was a personal inspection at each place during the week.

There were present, at the commencement of the inquiry, the

town clerk, Mr. Coleman ; Mr. A. H. Browne, solicitor ; Mr. Cartwright, surgeon ; Mr. Martin, civil engineer ; Mr. Andrews, Mr. Alderman Cartwright, Mr. Lowe, Mr. Isaac Fellows, Mr. Alderman Henry Walker, Mr. Alderman Joseph Walker, Mr. Alderman Gatis, surgeon ; the Rev. H. S. Fletcher, Bilston ; the Rev. J. B. Owen, Bilston ; Mr. John Shaw, Mr. John Thompson, Mr. J. B. Dimmack, Mr. Banks, Mr. William Braddon Upcott, and others. Mr. Laws proved the affixing and advertisement of the notice in the local papers as required by the Act.

My acknowledgements are due to the Town Clerk and Mr. Martin, C.E., for written documents they had drawn up relative to the past and present condition of the town. I also received much valuable information from Mr. Fellows, clerk to the Wolverhampton Union and Superintendent Registrar ; the Rev. J. B. Owen, Mr. R. Jones, engineer to the gas works ; Colonel Hogg, Superintendent of Police ; and others.

Wolverhampton is an inland town, and stands nearly in the centre of England : its site occupies some of the highest table land of the country, the market-place being about 516 feet above medium tide level. It is a parish, borough, and market town, in the Union of Wolverhampton, county of Stafford. The parish is in the southern division of the hundred of Offlow ; partly in the northern division of the hundred of Seisdon ; and partly in the eastern division of the hundred of Cuttlestone. In the first are the chapelries of Pelsall, Wednesfield, and Willenhall ; in the second the market towns of Bilston and Wolverhampton ; and in the third the townships of Featherstone, Hatherton, Hilton, and Kirwaston. It is a place of considerable antiquity, and was prior to the year 996 called "Hanton, or "Haniton ;" in that year Wulfruna, sister of King Edgar, and widow of Adhelin, Duke of Northampton, founded a college, in which she placed a dean and several prebendaries, or secular canons, endowing it with so many privileges that the town, in honour of Wulfruna, was called "Wulfrunis Haniton," of which its present appellation "Wolverhampton," is said to be a corruption. The college continued under the same government till the year 1200, when it was surrendered to the Archbishop of Canterbury, and it was subsequently annexed by Edward IV. to the deanery of Windsor. The deanery has been enjoyed by the successive deans of Windsor until the year 1845, when at the death of the late dean, Her Majesty, at the instance of the Ecclesiastical Commissioners, discontinued the appointment of Dean of Wolverhampton, whereby the large revenues attached to the deanery became vested in the Ecclesiastical Commissioners, and are by them now employed in the support of the collegiate and other churches within the parish. St. Peter's, the ancient collegiate church, is a perpetual curacy. St. John's is a perpetual curacy. St. George's is also a per-



petual curacy. The chapelries of Pelsall, Wednesfield, Willenhall, and Bilston, St. Paul, St. Leonard, and St Mary are all perpetual curacies.

The parish is said to be about 30 miles in circumference, it is intersected by, or is in immediate communication with the Birmingham, the Wyrley and Essington, the Stafford and Birmingham, and the Birmingham and Liverpool Canals; and the London and North Western Railway, and others now forming, pass to or near the town.

From the extent of the parish, and the known rule of Alfred the Great in allotting large areas to purely agricultural districts, and smaller areas to towns, the parish of Wolverhampton must have been chiefly agricultural at that period. The increase in population is indeed quite modern. The census of 811 returned 14,826 inhabitants; the present population is about 48,000, an increase in 37 years more than threefold.

*Bilston* stands to the south-east of Wolverhampton, and is the second town in rank and population in the Union.

*Willenhall* has a considerable population engaged in the trade of the district.

*Wednesfield* is a town or village consisting principally of one street, and many of the inhabitants are employed in agriculture.

The borough comprises the townships as under—

Wolverhampton	. 3,433 Acres.	Population 44,000 in 1841
Bilston	. . . 1,598 "	" 23,500 "
Willenhall	. . . 2,050 "	" 10 500 "
Wednesfield	. . . 3,535 "	" 4,000 "
Parish of Sedgley	. 7,000 "	" 10,000 "
Total . . 17,621		92,000

*Note.*—The present population in the district is said to exceed 50,000, as it includes much scattered population.

**GEOLOGY.**—*Wolverhampton* stands upon the new red sandstone formation close to the outcrop of the coal measures of Staffordshire, which rise to the surface on the east side of the town. The surface of the rock is covered with diluvial sand, gravel, and clay; and the shape and character of the district bears the distinct impress and contour of an ancient ocean; erratic blocks of granite and other rocks are found in the alluvium throughout the district, which overlays the coal-measures, as also the new red sandstone; these isolated stones vary considerably in size, from half a hundred weight up to several tons; they are fragmental and angular, in some instances many are rounded and water-worn; some have one side flattened and scored, as if they had been rubbed and ground

against a hard substance in a fixed position ; and from this, and other concurring circumstances, many geologists consider they have been floated to their present position in ice-floes and bergs which have drifted from some great northern continent long since submerged.

The diluvium varies in thickness from a few feet, to many yards in vertical depth ; the rock in general rising nearest to the surface in the more elevated situations, the greatest depth of diluvium existing in the valleys, where also clay and marl are found in greatest quantity. The whole formation may be considered very favourable for purposes of economical drainage, as the natural contours and gradients afford ready means to secure a good fall ; the material may be easily trenched or excavated, and the clay, with cheap coal, will render the manufacture of drain-tiles economical.

**TRADE AND MANUFACTURES.**—The geology of a district sometimes dictates the form or kind of trade and manufactures carried on there, and in few places is this more positively the case than in Wolverhampton. The Staffordshire coal and iron mines produce the mineral which has found occupation for a rapidly-increasing population, who are engaged to smelt, forge, and roll the iron into forms and sections required for the several purposes of art and trade ; by the kindness of Mr. Barker I was shown through one establishment in which he has an interest, where 700 tons of wrought iron is produced weekly. A considerable portion of the surface of the county to the eastward and southward of the town is occupied by mines and furnaces, for the manufacture of iron. From this iron is formed many descriptions of hardware, such as carpenters' and smiths' tools, files, nails, screws, hinges, hollow-ware, gun-locks, steel mills, machinery, and iron castings. Wolverhampton has long been celebrated for locksmiths, and the inhabitants were formerly much employed in the manufacture of the finer kinds of steel ornaments, but this branch of trade has declined in the district. There are several large manufactories of Japan, papier-maché, and tin goods ; as also several brass foundries and chemical laboratories. The whole district to the eastward, including Bilston, Portobello, Willenhall, and Wednesfield, are more or less employed in the iron trade.

**RAIN-FALL.**—I have not been able to obtain any accurate tables of the rain-fall of the district in the immediate neighbourhood of the town, but, judging from the information obtained at Birmingham, it will not be less than 24 inches, or much exceed 30 inches annually, and from the elevation of the site and the character of the formation, the air will be comparatively dry.

**SUBURBAN AND LAND DRAINAGE.**—Some portion of the land in the neighbourhood to the west has been drained, but not generally; deep drainage may however be accomplished cheaply, and would add very much to the value of this land, especially if the liquid refuse of the town is carried over it. To the eastward, in the mining district, there is not much attention paid to agriculture, and drains would not be of much avail, as the whole surface is disturbed by the mining operations carried on; when the coal and iron-stone has been removed, vast areas of the ground sink in, shaking and fracturing houses and buildings of all descriptions. From this cause there is scarcely a vertical engine chimney in the district.

**GOVERNMENT.**—Upon the passing of the Reform Bill, Wolverhampton was created a Parliamentary borough, comprising the townships of Wolverhampton, Bilston, Willenhall, Wednesfield, and the parish of Sedgley. The borough returns two members to Parliament.

In the year 1848 a charter of incorporation was granted to the inhabitants of Wolverhampton, but the district comprised in the municipal borough only extends over the township, and does not in any way comprise or interfere with the adjoining townships and parish.

Under the charter of incorporation a mayor, 12 aldermen, and 36 common councillors are elected, in whom is now vested the entire government of the town. George Benjamin Thorneycroft, Esq., is the present mayor; Mr. T. Walker, solicitor, is town clerk; Mr. John G. Lowe, borough treasurer; and Mr. R. Castle, town surveyor. Under the provisions and powers of the Municipal Act a borough police has been formed, composed of a chief constable, Colonel Hogg, and 22 men.



TABLE of the Annual Rental of Houses, Shops, Warehouses, and other Places, in each of the four Townships comprising the Wolverhampton Union.

WOLVERHAMPTON.				BILSTON.			
Number of Houses, Shops, Warehouses, and other Places.		Annual Rental not exceeding.	Total Amount.	Number of Houses, Shops, Warehouses, and other Places.		Annual Rental not exceeding.	Total Amount.
		£. s.	£.			£. s.	£.
Canal	1	6,200 0	6,200	Canal	1	1,260 0	1,260
Gas	1	1,120 0	1,120		1	890 0	890
	1	1,020 0	1,020		1	790 0	790
	1	630 0	630		1	710 0	710
Tythe	1	610 0	610		1	690 0	690
	1	600 0	600		1	630 0	630
Canal	1	550 0	550		1	590 0	590
	2	490 0	980		1	530 0	530
	1	460 0	460		1	480 0	480
	1	450 0	450		1	390 0	390
	1	440 0	440		1	370 0	370
	1	430 0	430		3	360 0	1,080
	1	420 0	420		2	350 0	700
	1	410 0	410		3	210 0	630
	2	400 0	800		1	200 0	200
	2	300 0	600		1	190 0	190
	1	290 0	290		1	160 0	160
	3	280 0	840		1	150 0	150
	1	270 0	270		1	140 0	140
	1	260 0	260		4	110 0	440
	2	230 0	460		1	100 0	100
	3	220 0	660		2	90 0	180
	3	210 0	630		1	70 0	70
	3	200 0	600		18	50 0	900
	4	190 0	760		32	40 0	1,280
	2	180 0	360		48	30 0	1,440
	5	170 0	850		106	20 0	2,120
	3	160 0	480		158	15 0	2,370
	7	150 0	1,050		202	10 0	2,020
	8	140 0	1,120		2,244	7 10	16,830
	8	130 0	1,040		1,390	5 0	6,950
	10	120 0	1,200				
	22	110 0	2,420				
	16	100 0	1,600				
	31	90 0	2,790				
	33	80 0	2,640				
	55	70 0	3,850				
	48	60 0	2,880				
	126	50 0	6,300				
	161	40 0	6,440				
	239	30 0	7,170				
	631	20 0	12,620				
	271	15 0	4,065				
	1,084	10 0	10,840				
	4,406	7 10	33,045				
	2,104	5 0	10,520				
..	..		133,770	..	..		45,280



Table of the Annual Rental of Houses, Shops, Warehouses, &c.—*continued.*

WILLENHALL.			WEDNESFIELD.		
Number of Houses, Shops, Warehouses, and other Places.	Annual Rental not exceeding.	Total Amount.	Number of Houses, Shops, Warehouses, and other Places.	Annual Rental not exceeding.	Total Amount.
	£. s.	£.		£. s.	£. s.
Railway 1	880 0	880	Railway 1	1,250 0	1,250 0
Tythes 1	500 0	500	Tythe 1	1,000 0	1,000 0
1	470 0	470	1	400 0	400 0
Coal-pits 1	250 0	250	Canal 1	300 0	300 0
2	150 0	300	1	240 0	240 0
Canal 1	110 0	110	Railway 1	190 0	190 0
Gas 1	100 0	100	1	150 0	150 0
1	80 0	80	1	140 0	140 0
3	50 0	150	2	100 0	200 0
5	40 0	200	1	50 0	50 0
15	30 0	450	3	40 0	120 0
64	20 0	1,280	4	30 0	120 0
88	15 0	1,328	16	20 0	320 0
304	10 0	3,040	19	15 0	285 0
1,222	7 10	9,165	50	10 0	500 0
332	5 0	1,660	351	7 10	4,032 10
			416	5 0	2,080 0
..	..	19,963	..	..	11,377 10

ABSTRACT OF ANNUAL RENTAL.

	£.	s.	d.
Wolverhampton . . .	133,770	0	0
Bilston . . . . .	45,280	0	0
Willenhall . . . . .	19,963	0	0
Wednesfield . . . . .	11,377	10	0
	£210,390	10	0

LIST OF RATES LEVIED WITHIN THE BOROUGH.—There were four rates levied within the borough in the year 1848, namely a town rate, poor rate, county rate, and highway rate; the town rate is levied annually upon an assessment varying in amount with the annual value of the property assessed; thus houses of 30*l.* a year rental, are assessed at the maximum rate of 2*s.* 6*d.* in the pound, and the amount varies with the rental until it reaches the minimum of 6*d.* in the pound upon assessments of 4*l.* The poor rate is made by the overseers in the usual way, and is collected by persons appointed for that purpose by the Board of Guardians. The amount varies with the requirements of the Guardians of the poor; during last year rates were made of 1*s.* 4*d.* and 2*s.* in the pound.

The county rate generally averages from three farthings to a penny in the pound, and is levied in the usual manner by precept from the high constable of the hundred.

The highway rate is not levied more frequently than once in a year and a-half; is usually 6*d.* in the pound. . It is collected at a commission of 5 per cent.\*

A LIST of the several RATES made within the Borough for the past year.

	£.
Town rate . . . . .	5,100
Poor rate . . . . .	16,949
County rate . . . . .	1,791
Highway rate . . . . .	2,700
	<hr/>
	£26,540
	<hr/>

This is the gross amount of each rate, but a deduction of one-tenth should be made from each rate (with the exception of the county rate) for sums uncollected.

The gross estimated annual rental of the property in the municipal borough is 133,770*l.*

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\* The average number of poor-rates is three in two years.

ANNUAL AMOUNT OF POOR-RATE and its Sources; also the Per Centage in the Pound, the Annual Amount of Out-door Relief, and the Estimated Population for each of the Townships of the Union, for the Year 1848.

	Wolverhampton.			Bilston.			Willenhall.			Wednesfield.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
Receipts from Poor-rate	11,454	1	3	3,635	19	1	2,331	9	3	705	14	9
' from Relations of Paupers	6	2	6	1	8	0	0	12	0	.	.	.
' from Payments under Orders of Removal	2	9	4	2	19	4	2	6	6	0	17	6
' from Fines, Penalties, and Forfeitures paid under Convictions}	3	10	0	1	0	0	.	.	.	.	.	.
or Orders of Justices	0	2	6	.	.	.	.	.	.	.	.	.
' from Lists of Claimants and of Voters old	1	6	8	.	.	.	.	.	.	.	.	.
Other Receipts . . . . .												
	£11,467	12	3	3,641	6	5	2,334	7	9	706	12	3
Or, a gross sum collected in Poor-rates in one year of 18, 149 <i>l.</i> 18 <i>s.</i> 8 <i>d.</i>												
The per Centage in the Pound, per annum . . . . .	0	2	6	0	2	6	0	2	9	0	1	7
The whole Annual Amount expended in Out-door Relief . . . . .	2,799	19	8 $\frac{3}{4}$	1,586	13	4 $\frac{1}{4}$	606	18	3 $\frac{3}{4}$	191	0	1 $\frac{1}{2}$
Total amount expended in Out-door Relief in one year, 5,184 <i>l.</i> 11 <i>s.</i> 6 $\frac{1}{4}$ <i>d.</i>												
Estimated Population in June, 1849 . . . . .	44,000			23,500			10,500			4,000		
Total Population, 82,000.												

NOTE.—The balances due to or from the townships would reduce the *necessary* "Total Receipts" for Wolverhampton by about 500*l.*, and increase them for Bilston by about 600*l.*



## LIST of STREETS, &amp;c., in WOLVERHAMPTON UNION, where the most Out-door Relief is given.

	Yearly.	
	£.	£.
<i>In Wolverhampton.</i>		
Stafford-street, including Caribbee Island, Cole's Croft, Back-lane, Castle-place, Middle-row, New-street, Little's-lane, and Faulkner-street . . . . .	350	
Great and Little Brick-kiln-streets, with Hall's-row, Compton-street, and courts . . . . .	200	
Salop-street, with Brook-street and courts . . . . .	180	
Walsall-street, with courts . . . . .	150	
Worseley-fields, with courts . . . . .	100	
Dudley-road, with courts . . . . .	100	
Pountney-street, with courts . . . . .	90	
	—	1,170
<i>In Bilston.</i>		
Wolverhampton-street . . . . .	120	
Hall-street and Fold, and Pipes Meadow . . . . .	120	
Ellingshall-lane and Gibbet-lane . . . . .	100	
Temple-street . . . . .	100	
Bridge-street . . . . .	80	
Oxford-street . . . . .	90	
High-street . . . . .	80	
Gozzard-street . . . . .	60	
	—	750
<i>In Willenhall.</i>		
Portobello . . . . .	50	
Walsall-street . . . . .	40	
Little London . . . . .	40	
King-street . . . . .	38	
Wolverhampton-street . . . . .	40	
	—	208
<i>In Wednesfield.</i>		
The Heath . . . . .	76	
Rookery-street . . . . .	16	
Church-street . . . . .	14	
	—	106
Total sum expended in these places . . . . .	£2,234	

NOTE.—The Wolverhampton Union includes the four townships of Wolverhampton, Bilston, Willenhall, and Wednesfield. Wolverhampton parish includes the whole of the Union, and some other places. Wolverhampton municipal borough includes only Wolverhampton township. Wolverhampton, parliamentary borough, includes the whole of the Union, and also the parish of Sedgley which is in Dudley Union. Under the denomination of "other places," are comprehended wharfs, coal-pits, iron-works, gas-works, canals, rail-roads, manufactories and tythes; in fact everything rated except land. The places where the most out-door relief is expended, and where



most severely. The following tables are taken from a narrative drawn up by the Rev. M. Leigh, A.M. :—

TABLE exhibiting a Weekly State of the new Cases of Disease, and of the Deaths from Cholera at Bilston in August and September, 1832.

Weeks.	—	Cases of Disease.	Deaths.	Ratio of Deaths to Cases.*
1	From 4th to 10th August . . .	150	36	1 in 4
2	„ 11 „ 17 „ . . .	616	133	1 „ 4½
3	„ 18 „ 24 „ . . .	924	298	1 „ 3
4	„ 25 „ 31 „ . . .	832	184	1 „ 4½
5	„ 1 „ 7th September . .	694	62	1 „ 11
6	„ 8 „ 14 „ . . .	250	23	1 „ 11
7	„ 15 „ 21 „ . . .	102	6	1 „ 17
	Total . . . . .	3,568	742	1 in 5

\* The ratio here is to be considered as an approximation merely.

TABLE exhibiting a Weekly State of the Mortality at Bilston from Cholera, in August and September, 1832; the Children of both Sexes up to Ten Years of Age, and the Males and Females above that Age being each separately given.

Weeks.	—	Children to 10 Years.	Above 10 Years.		Total.
			Males.	Females.	
1	To 10th August . . . . .	5	15	16	36
2	„ 17 „ . . . . .	23	54	56	133
3	„ 24 „ . . . . .	58	135	105	298
4	„ 31 „ . . . . .	34	77	73	184
5	„ 7th September . . . . .	18	23	21	62
6	„ 14 „ . . . . .	6	6	11	23
7	„ 21 „ . . . . .	4	2	..	6
	Total . . . . .	148	312	282	742

#### SUMMARY.

—	Children to 10 Years.	Above 10 Years.		Total.
		Males.	Females.	
Estimated Population of Bilston, August 4, 1832 . . . . .	3,675	5,703	5,322	14,700
Reported cases of Disease, August 4 to September 21 . . . . .	..	..	..	3,568†
Ascertained Deaths from Cholera, same period . . . . .	148	312	282	742
Ratio of Cases to Population, say as 1 in 4 *	..	..	..	..
„ Deaths to Cases, 1 in 5 . . . . .	..	..	..	..
„ „ to Population, 1 in 20, or . . . . .	1 in 23½	1 in 18	1 in 18½	1 in 20

\* The ratio here, as in the foregoing Table, is to be considered merely as an approximation to the truth, not as critically exact in any case, but as nearly so, perhaps, as can be deemed necessary.

† It was found impossible to ascertain the ages and sexes of those who survived the attack: the gross number, therefore, under this head only could be given, as no calculation can be formed relative to the ratio of deaths to cases in any particular class.



TABLE showing the Number of Widowers, Widows, and Orphans, by Cholera, at Bilston, in August and September, 1832.

Orphans by Cholera, without Father or Mother, under 12 Years of Age.	Orphans who lost their Fathers by Cholera, under 12 Years of Age.	Orphans who lost their Mothers by Cholera, under 12 Years of Age.	Widowers who lost their Wives by Cholera.	Widows who lost their Husbands by Cholera.
28 Males 34 Females	94 Males 105 Females	105 Males 93 Females	103	131
62 Total	199 Total	198 Total		

TABLE exhibiting the Number of Persons who died at Bilston, in the Months of August and September, in 1828, 1829, 1830, and 1831, when Cholera did not prevail, and in 1832, when it did. The Deaths from Cholera in that Year being distinguished from the others.

August and September.	Children to 10 Years.	Above 10 Years.		Total.
		Males.	Females.	
No Cholera, 1828 . . . .	47	15	14	76
„ 1829 . . . .	28	8	7	43
„ 1830 . . . .	25	9	11	45
„ 1831 . . . .	66	17	13	96
1832				
Of Cholera . . . . .	148	312	282	742
Of other Diseases . . . . .	18	9	12	39
Total in 1832 . . .	166	321	294	781

“This Table is given for the purpose of showing the ordinary rate of mortality at Bilston in the months of August and September. In estimating that rate, however, the mortality in 1828 and 1831 cannot be taken into account without some qualification, for in each of those years, at the time referred to, a fatal epidemic prevailed in the town.\* The average, then, of 1829 and 1830 must be taken as the nearest and most satisfactory approach we can make to the ordinary rate of mortality; and, as that gives us for the whole population only 44, we see at once the full extent of the devastation produced by the cholera in 1832;† 737 persons beyond the ordinary rate having actually

\* I state this on the authority of Mr. Norris Best, the senior surgeon at Bilston, and am happy in having an opportunity of acknowledging his assistance on many occasions. In 1828, severe bowel complaints, and in 1831 scarlet fever, were, it seems, the prevailing diseases referred to.

† The classified average, or ordinary rate, may be exhibited thus:—

Children . . . . .	26½
Females . . . . .	9
Males . . . . .	8½
Total . . . . .	44

perished, as it would seem, from that cause alone: so unfounded are the speculations of those who allege that cholera adds but little to the ordinary mortality of a place—so idle the notion that the timid, the profligate, and the aged, are its only victims.

“(Signed) F. MACANN, M.D.”

LIST of PLACES where Epidemic, Endemic, or Contagious Diseases, most frequently occur.

In *Wolverhampton*—Caribbee Island, Cole’s-croft, Castle-place, Stafford-street (all Irish stations), with Canal-street, Back-lane, Hallett’s-row, Little Brickkiln-street, Brickkiln-croft, Pountney’s-pool, and, towards Chillington Works, Monmore-green.

In *Bilston*—Temple-street, Brown’s-square, New-town, Hall-fold, Workhouse-fold, Quarry-lane, Bridge-street, Green-croft.

In *Willenhall*—Portobello.

In *Wednesfield*—Grove-street, Wednesfield-heath.

TABLE of Mortality and Sickness from Epidemic, Endemic, and Contagious Diseases, and other causes.

	In 1846	In 1847	In 1848
No. 1. The Number of Deaths from Epidemic, Endemic, and Contagious Diseases were . . . . .	322	825	381
2. The Number of cases of Sickness not terminating in Death, from such Diseases I estimate at ten-fold the Deaths . . . . .	3,220	8,250	3,810
3. The Number of Deaths from all other causes were . . . . .	1,838	2,125	1,812
4. The Number of cases of Sickness not terminating in Death, from all other causes I estimate at thirty-fold the Deaths . . . . .	55,140	63,750	54,360
The Total Number of Pauper cases were . . . . .	4,319	6,320	4,498
I estimate the Pauper cases of the several classes, as numbered above, at about—			
No. 1 . . . . .	95	300*	90
No. 2 . . . . .	550	1,600	600
No. 3 . . . . .	193	210	190
No. 4 . . . . .	3,720	4,400	3,600

\* Of these many were Irish immigrants.

In arriving at the above conclusions, I have examined the documents in my possession, and consulted the medical officers of the Union; I have also availed myself of the local knowledge of the relieving officers and the registrars.

STATISTICS relative to the Population, Mortality, and Sanitary Condition of the several Townships of *Wolverhampton Union.*

	The four Townships constituting the Wolverhampton Union.				Total.
	Wolver- hampton.	Bilston.	Willen- hall.	Wednes- field.	
Population as per Census of 1841	36,382	20,180	8,695	3,168	68,425
Number of Deaths registered by the District Registrars of the Union in the year . . . 1841	1,006	613	229	70	1,918
„ „ „ 1842	1,111	620	250	108	2,089
„ „ „ 1843	911	413	179	59	1,562
„ „ „ 1844	956	542	192	74	1,764
„ „ „ 1845	1,034	498	210	87	1,829
„ „ „ 1846	1,111	722	245	82	2,160
„ „ „ 1847	1,668	847	320	115	2,950
„ „ „ 1848	1,224	613	246	110	2,193
Total of first seven years . .	7,797	4,255	1,625	595	14,272
Total of last seven years . .	8,015	4,255	1,642	625	14,537
Average per thousand for last seven years . . . . . }	31	30	30	28	..
The Number of Deaths from Epidemic, Endemic, and Con- tagious Diseases in . . 1846	125	145	36	16	322
„ „ „ 1847	462	249	80	34	825
„ „ „ 1848	208	100	50	23	381

(Signed) ISAAC FELLOWS,  
*Clerk to Wolverhampton Union, and  
Superintendent Registrar.*

WOLVERHAMPTON. *Present State and Condition of the Town.*  
The situation of the town is most advantageous, not only for  
purposes of trade, but for health; perfect and complete sanitary  
works and regulations alone are required to give full efficacy to  
the natural capabilities which exist. The site is elevated, and  
the stratification is comparatively dry, and there are good natural  
adients in almost all directions from the centre of the town to  
the suburbs. If full advantage is taken of these falls, the sewers  
and drains may be constructed very cheaply.  
There are several narrow and crooked streets, which the Town  
Council are desirous to widen and improve, and there are also  
some confined yards and close courts; but the town in general is  
not crowded. The streets have not been laid out to any pre-  
conceived plan, and consequently there are some things to be  
regretted in connexion with them. They do not afford the best  
arrangement for sewers or drains which might have been obtained, or give  
the most facility for ventilation, or even the best accommodation to  
[46.]



traffic. There is nothing, however, in them to prevent the requisite sanitary improvements being carried out; and as the town is increasing, a wise foresight will provide for the future in all these things.

*Present Sewers and Drains.*—In the rapid growth of the town, a general plan of sewers and drains has not been laid down, and, consequently, such as exist either act prejudicially, or very imperfectly serve the purpose intended. Many of these drains have been laid within a short distance of the surface, and open out into what, at the time they were made, was the nearest ditch; and these now act most prejudicially on the house property which has grown up near them, as also on the health of the inhabitants. There is an entire absence of main sewers or leading lines of outlet, and this renders inefficient such drains and sewers as might otherwise be considered useful. A plan of the existing sewers and drains was submitted by the town clerk, on which is shown 10,275 lineal yards of covered sewers and drains, and 2,445 lineal yards of open ditches, made to hold or convey sewage refuse. This is a total length of 12,720 lineal yards of sewers, drains, and ditches, or  $7\frac{1}{3}$  miles. On the same plan is shown 32,750 lineal yards of inhabited streets and roads, or  $18\frac{3}{4}$  miles; so that nearly two-thirds of the town is without any form of sewer, drain, or ditch, to receive the refuse. Mr. Martin calculated that 4,000 houses, and about 26,000 people, have consequently no form of convenience to free themselves from their refuse, but are necessitated to retain it in their houses or the immediate neighbourhood. This want of sewers is, perhaps, not worse, if so bad, as the large open ditches in the centre and suburbs of the town; of which there is “a length of 2,445 yards, of an average width of one yard, or, together, forming an area of rather more than half an acre, giving off, in ordinary summer days, 200,000 cubic feet of dense miasma, and vitiating ten millions of cubic feet of atmosphere.” Mr. Martin also stated, that:—

“Not a single gradient is accurately known, nor their depths and positions below the street way; so that, when required to be opened, they are obliged to be fished for.

“It is hardly requisite to say, that no calculations as to their requisite capacity have been made. In shape, some are round, and some are square-bottomed; the oval shape has not yet been adopted.

“The junctions are generally made at right angles. As an instance, Snow Hill and Dudley-street sewers meet opposite to each other, and drop their sewage a depth of about 3 feet into Bell-street sewer, so as to destroy all current, and cause only accumulations, where a capital opportunity might have been gained for effective scouring. This junction is shown on the plan to be curved; but this is erroneous, as I took particular care to observe them when opened some time since for repair.

"Another sewer discharges itself from George-street into St. John's-square, and the sewage percolating thence through the graves finds its way into the wells of the houses in Worcester-place, where the ammonia is perceptible."

The want of proper sewers and drains is felt to be a great disadvantage to all parties, and Mr. Edward Banks, architect, gave the following evidence on this subject:—

"In the course of professional practice, I meet with almost daily cases of inconvenience in draining buildings, from the deficient sewerage of the town.

"In many streets there are no drains at all, excepting surface ones: and, where there are under-drains, in most cases they are so near the surface that the cellars of buildings cannot be drained into them. In consequence, parties are continually compelled to have soil-tanks made on their premises, and, in some cases, under their very buildings, to receive the soil from water-closets, &c. These, of course, have frequently to be emptied, and thereby create great nuisances to the proprietors and to their neighbours. In not a few cases, and where parties neglect them, the liquid manure may be seen oozing through to the surface, and stinking horribly.

"In consequence of this difficulty in getting rid of the refuse, parties in many cases will not go to the small expense of a water-closet, but content themselves with privies and open cesspools, and this, too, frequently where, perhaps, they have but a few yards of land not occupied by building.

"The difficulty of getting proper drainage is also very detrimental to improvement. Owners of property would frequently deepen their existing cellars, or make new ones, if they could afterwards drain them. In several cases, private individuals have gone to considerable expense in making sewers in the streets, which, of course, are made to suit only their own particular case, without reference to any system of levels."

The immediate connexion of fever with want of drainage was fully and clearly stated by several of the medical gentlemen. Mr. E. H. Coleman, surgeon, had been in practice for 25 years, and was well acquainted with the town and its inhabitants.

"In the worse drained and most crowded portions of the town fever most frequently prevailed. There were districts of the town where fever was unknown, and there were other places where it was rarely absent, *and in those parts there were no drains*. When the cholera visited the town in 1832, it prevailed in all those places where fever was common."

Of the bad and dangerous effects of some of the open sewers and ditches Mr. J. T. Cartwright gave evidence.

"At the back of Hallett's-row there is an open sewer from two to three feet wide; the receptacle of drains and other nuisances. When the town was in an unhealthy state it was generally found that in that neighbourhood epidemics prevailed. There are entries in Salop-street filled with filth and nuisance. There are also courts in Worcester-



street and Great Brickkiln-street in a very bad state. In one half of Prat-street the mud is about twelve inches deep. The refuse from thirty or forty houses is daily swept into this street, and consequently the filth is accumulating. The mud becomes green and fetid, and the smell at times is most disgusting. The effect of this is a direct depreciation of the property, as the tenants rapidly lose their health, and are constantly removing, so that disease is carried to other parts of the town."

The absence of any system in arranging and constructing the drains which at present exist, was also described by Mr. Castle, Town Surveyor, who stated "that there was no general system of sewerage in the town. Some of the drains had been made at the public expense, but most of them had been constructed by private individuals. The existing sewers had no general connexion, and there were great nuisances throughout the town generally from want of sewerage." With an imperfect sewage as described stench-traps could not be of much use, and Mr. Martin stated, "A few traps have lately been put down by the Sanitary Committee, but these are the exception with regard to the gully holes."

The surface gutters are also imperfect as stated by the same witness. The means for carrying the surface water into the sewers is also very defective as regards the gutters; some being mere open unpaved channels; the second sort of cobble stones, and the third and best of win-stone paved in 3 and 4-inch cubes. No proper gutter slabs have yet been laid down.

As the Board deem it most desirable that the inhabitants of a town or district should describe their own wants and difficulties, I have given brief extracts from the evidence voluntarily tendered. The following is clear and distinct as to the want of system in the present sewers, the capability there is in the district for improvement; the necessity there is for power to control building, so as to prevent undue overcrowding, and the want of compulsory clauses to compel the erection of proper conveniences, and the power to pave and cleanse.

*Mr. James Gatis*, alderman of the borough, stated,—

"I am well acquainted with the general condition of the borough. I think it is necessary for the advantage of the whole community that a general system of sewerage should be carried out. I do not anticipate any difficulty in carrying out a system of sewerage, no town could be better adapted for sewerage than this is.

"There are many parts of the town I consider overcrowded with houses, we have no power to prevent this.

"Many of the poorer classes have no conveniences, some have conveniences common to many houses; but these are generally rendered useless because there is no means of regularly removing the refuse, the privies then become filthy and unfit for use.

"We have a great many Irish in this town, and I believe that unless there is a law to compel the use of proper conveniences they would



not avail themselves of the improvements. In my own buildings I know that when there are places provided they will not use them. The unpaved districts of the town are in a dirty condition, and I seconded a proposition in the Council to have them put in a temporary state of repair to prevent, if possible, the extension of the cholera to these districts; but it was decided that we had no compulsory power, or funds to do even this necessary work. Although a medical man I do not think I can add to the testimony of the medical gentlemen who have gone before me, although I can fully confirm it as to disease being consequent upon defective drainage."

I made a personal inspection of the whole district in company with the town clerk and several other gentlemen. In *Mr. Friar's yard, Canal-street*,\* there were middens, pig-sties, and open stagnant ditches, which were a great nuisance to the place, and might be cheaply drained. In *Coles-croft, Stafford-street* there are 41 houses, containing 283 inhabitants, 94 of whom were adult lodgers. This is an average of more than nine persons to each house. The general average is five to one such house; the place was very filthy. It must ever be remarked as a rule, that a district in a low sanitary condition is sure to become overcrowded, and the reverse is also true, namely, that an overcrowded district will rapidly fall into a low, or bad sanitary condition. The one evil produces, and reacts upon the other. *Carbery-street*. The surface here was unpaved, and consequently dirty. There were two public privies, but so disgustingly filthy as to be unfitted for use. *Caribbee Island*, is a congregation of ruinous cottages to which there are no sewers or drains; the surface of the ground is unpaved and filthy to a degree. There is no water supply. This place was described to me by the medical gentlemen as a complete "*Fever nest*."

The ruinous effect of a want of proper means to provide good sanitary accommodation is most forcibly exhibited in the condition of the property here. Houses recently erected, let for 2s. 6d. a-week, whilst the older ones of a similar character only bring from 1s. 6d. to 1s. 3d. a-week, and this is in a great measure owing to the deterioration which has arisen from want of drains, proper pavement, separate privies, and a good water supply. A drain has been made from some new houses at a considerable cost, but it merely takes the water from an unpaved surface, and consequently does not serve the whole of the purposes to which a drain should be applied. There are detached privies and cesspools which have been erected at considerable expense, but being common to the whole property they will rapidly become filthy and ruinous; in fact, they were filthy when I inspected them; and as it is no particular person's business to keep them clean, they must soon be unfit for use. This whole property, old and new, is almost

\* The names of most of the streets and places visited will be found in the list of places where epidemic, endemic, and contagious diseases prevail.

entirely let off to Irish families, from whom the rent is received once a-week by a collector, who attends to a great number of such houses. He stated to me that the Irish pay their rents, when thus demanded, more punctually than the English poor; but the reason given for this is very significant: "The Irish pay better than the English; they take in so many lodgers. I never can tell how many are so taken into one house, neither is it possible to tell, unless you went in at midnight, as they will give no account themselves. I have, however, seen 30 people laid down on the floor of one room, men, women, and children of both sexes mixed indiscriminately together." These rooms are about 10 feet square and 7 feet high, and contain about 700 cube feet of space for 30 people, about 23·333 cube feet of air space to each person only; they ought not to have less than 350 feet each person. It will be seen from the evidence of the relieving officer that it is in such places the largest amount of money is expended, and the united testimony of the medical gentlemen point out these districts as the most unhealthy, abounding in fever. In fact, as they are described, "*Fever nests.*" *Stafford-street* has surface channels only. *Chamberlain's-yard* is very close and dirty, with open midden and privies totally unfit for use. *Smith's buildings.* The surface here is unpaved; there were public privies, but so ruinous and dirty as to be unfit for use. The Inspector of Nuisances remarked, "If more than two families have access to a privy it is impossible to keep it clean." This, I think, is a general truth. There may be, and are, exceptions; but privies should be what their name denotes they were intended to be, PRIVY.

*North-street, Stafford-road.*—The sewage of a portion of the district flows out here on to the surface, in front of the houses, and creates a great nuisance. *Old Dunstable-lane*, out of *North-street*. There is no pavement, but open and very filthy drains. *Brook-street* is a private street, entirely undrained and unpaved, and is, in wet weather and winter, very dirty. There are many streets in this condition in the suburbs. At the bottom of *Bell-street* there is a sewer which passes under some houses; the Town Clerk stated that in these houses there was generally fever. *Great Brickkiln-street* is below the general level, and the whole surface in front of the houses is covered with large quantities of fetid matter. *Zoar-street.* The cottages here are new, but the surface is not paved or the land drained, and the place is consequently in a filthy condition. There are no lamps in the district. In the yards at the back of these cottages there are privies which are kept clean. Betwixt *Darlington-street* and *Salop-street* there is an open drain from the higher portion of the town, full of putrid matter. This ditch or drain is, in several places, expanded into wide open cesspools or ponds, made for the accumulation of the refuse to be used as manure; the evaporation from these places must be swept upon and through the adjoining houses, according



as the wind may carry it; and in 1832 some of the houses in Darlington-street were nearly depopulated by the cholera, which broke out suddenly, at a time when the motion of the air carried the miasma into the houses. These streets are wide and open, the space betwixt them is also open, and the houses are of a superior class; but this huge open ditch poisons the whole place. A 2-feet drain would take off all the land, street, and house-drainage of the district. There is a knacker's yard near here, full of putrid bones, dung, and other fetid refuse. Dead horses were laying about at the time of my visit. The space is surrounded by houses. This neighbourhood was the only one inhabited by the wealthier classes in which cholera raged. There is a tan-yard and house close to this ditch, and scarlet fever had attacked the residents. *Black Brook.* In 1832 there was an open pond of refuse here, which let for 100*l.* a year for manure; the cholera was very rife on its visitation; this pit has since been filled up and built upon, but it is not drained; fever is very rarely absent from these cottages; one of the medical gentlemen stated he was quite tired of attending to the cases, they were so numerous and constant. *Piper's-row.* There is a close court in this row, from which the old privies and cesspools had recently been removed; and one of the tenants said he was much obliged for the improvement, as the health of himself and family had been much better ever since. At present there are open drains and no pavement. *Oxford-street* is unpaved, and there are closed courts on each side, and at the back an open ditch, into which the privies empty; there are also pigsties and open middens crowded together. In 1832 cholera raged very much here; many persons were unwell at the time of my visit of inspection. The inhabitants complained much of the filthy state of things about them. There is no water supply, but a pump of bad water in the centre of the yard. The rent of the cottages is 3*s.* 9*d.* a week; a poor-rate, amounting to 14*s.* a year, is levied on each house. The tenants expressed themselves most anxious to have the powers of the Public Health Act in operation, as they said their landlord would not give any accommodation or do any repairs.

*York-street* opens out on to an open unpaved space, covered with liquid filth; the cottages are, however, of a superior class; they have two living rooms on the ground floor, and two chambers. They let for 3*s.* 6*d.* a week rent. At a distance of about 30 feet from the houses, small washhouses are erected in pairs, one to about seven houses; a small boiler is fixed in them, and the general washing of each family is done in them; there is also a small brick oven by the side of the boiler. This accommodation seemed to be highly appreciated by the tenants. There is no water supply but from a pump in the yard. The whole of these houses were let, and I was informed that they were much sought after. It is highly desirable that cottages should have separate wash-houses



and bake-houses ; it removes the bustle and dirt from the living-rooms, and affords a superior means of comfort at a very slight addition of expense. In fact if land is judiciously and liberally laid out, well drained, the streets, courts, and yards properly formed and paved, and a full supply of water is made general,—a better, because more regular rental will be obtained for land and cottage.

On Tuesday afternoon I continued my personal inspection, accompanied by Colonel Hogg, and an inspector of police. The first place visited was *Noah's Ark yard* ; there are open middens and channels, and pigsties, very dirty ; at the back of the houses there are privies and large open middens, confined and I was told generally dirty, but they had been recently cleaned. The tenants complain very much of their condition, and wished to have the means of permanent improvement. In *Brown Bear yard* there was an open midden, with a privy unfit for use ; the smell was very bad.

*Canal-street, Blakeman's-yard.*—This is a court about 4 feet wide, in the form of an *L* ; the entrance is through a closed passage, there is a large open midden, and a privy dreadfully filthy.

There are other courts in Canal-street, with privies equally bad, inhabited by Irish ; there has been fever here. The English residents complained much of this state of things. The landlord resides in London. The Rev. G. Fraser, incumbent of St. Mary's in this district, says, "there is always more or less fever here ;" he has wondered many times that there is not more, but attributes this to the cheapness of coal causing more than ordinary ventilation. He also stated, "I think there can be no doubt but that vice is very much encouraged by dirt and overcrowding."

Many poor persons complain of this state of things, as their children are growing up ; this applies to the want of separate sleeping-rooms for boys and girls. Many of the poor take in lodgers, and have three beds in one room—father, mother, lodgers, and children crowded together. Among the colliers there is frequently a night and a day shift, and they use the same bed.

This overcrowding generally produces fever, small-pox, and other contagious diseases, and spreads them through a whole district. Night and day shifts soon break down the health of men, crowded into the same rooms and using the same beds. When men are so brought together in cases of emergency, it would be true economy to erect temporary sheds or huts in which they could lodge and sleep with proper ventilation, rather than allow the cottages to be so overcrowded.

*Stafford-street, Langley's yard.*—There are large open middens, and seven privies open into one cesspool. The house-doors are within one yard of the cesspools ; there is much fever and disease here, and the place is complained of by the inhabitants.

*Middle row.*—There is a closed yard, with privies underneath the bedrooms (see plan of cottages in court out of Piper's-row, as the privies and bedrooms are similarly situated), the smell from which is most offensive; there is a small room about 9 feet square, in which seven persons sleep, a similar room with eight persons, and in another place there are two small rooms, about 10 feet square, in which 10 persons sleep in one room over a privy; there is fever here. The tenants complain that before rain the smell from the middens and privies is most offensive.

*Fender-row.*—There are two privies here under the houses; the wall is damp and rotten for 15 feet in height.

*Stafford-road.*—In the Lowen's passage there is a privy under the house.

*Blossom's Fold* is unpaved and dirty.

*Walker's-yard, North-street,* is close and confined; there is a bed-room over the privy.

Wednesday, accompanied by Colonel Hogg, inspected *Dudley-road, Underhill's-buildings.*—The yards are low, with open channels and filthy middens; they have water from a pump, the water-works pipe is not complete. Rent 4s. per week, and rates 2l. per year. The Dudley-road is open to the fields, it is unpaved and undrained, the yards behind are stagnant and filthy. Rent of houses here 3s. per week. The inhabitants complain of this dirty state of things; there is a pump on the premises, but the water is not good; there are new houses building here without privies. The Rev. H. Pountney thinks a low sanitary state inimical to good morals, and is in favour of the Health of Towns Act.

*Worcester-street, Half-moon Entry.*—In these yards there are privies and a slaughter-house behind; they are unpaved; there are open middens and pigstyes very dirty.

*Bennett's Fold, Salop-street.*—The privies here are very badly arranged.

*Hill's-court, Salop street.*—This is a long confined court, in which are nine houses; the privies are at the top of the yard, and smell very bad; the rent is 1s. 8d. per week for two rooms; the court is paved. There is no water within 300 yards; there is a pump, but the water is unfit for use.

There are in the town crooked dark passages and closed yards, with open middens, two rooms in which let for 2s. 6d. per week. There is, however, one general desire in Wolverhampton for improvement. The Town Council desire to have the power necessary to lay out streets, form them, drain, pave, and light them, and the inhabitants generally expressed themselves most wishful for such improvements. The medical gentlemen freely and voluntarily gave their valuable time, and more valuable testimony, as to the great necessity there was for sanitary works. I would beg to remark, that in all cases the medical gentlemen display a dis-



interested earnestness in desiring improvement that is honourable to human nature. Their profession takes them into the crowded outcast districts; they witness the wild delirium of fever, and they know that the fetid cesspool, or stagnant sewer, is the direct cause. Sanitary measures are not a matter of speculation with them; they can demonstrate that miasma and disease are cause and effect. In no case have I ever sought the assistance of a medical gentleman in vain; it has generally been offered as voluntarily as disinterestedly.

The plans, elevations, and sections, published with this Report, show the confined and objectionable plan of some of the courts in the town. The narrow space in front of the houses, the covered passage by which the cottages are approached, and especially the position of the privies and ash-pits, or middens, are peculiarly objectionable, as are also the bed-rooms over these places. Bad health and fever are constantly to be found in these places.

The following remarks embody the experience of the Inspector of Nuisances, and they suggest many things which may be considered for improvement. The constant recurrence of the same nuisances, under the present system of privies and open cesspools, and the overcrowding of houses, must have prominent consideration in all projected works. Mr. Laws said:—

“To give a detailed report of every inspection would, I presume, be tedious and unnecessary. I, therefore, respectfully state, that during the period of my service (since October 23, 1848) I have reported 170 cases, the great majority of which consist of foul privies and cesspools, or ashpits, some few cases of offensive pigstyes and accumulations of manure, &c., and the residuc in open ditches, drains, or gutters, or insufficient drainage.

“The general construction of the privies and ashpits in the poorer parts of the town are open tanks, or receptacles for the soil, which is afterwards covered over until full, with fire ashes and other refuse.

“In very many instances the privies have been built over the ancient ditches or watercourses, leaving their contents openly exposed until some heavy falls of rain shall wash the same away, and where such is the case we seldom find any ashpits at all; the consequence is, that an accenmulation of ashes, &c., finds its way also into the same reservoir, and the whole becomes a mass of stagnated corruption.

“To order and also enforce the removal of these has been my chief duty, and, in several cases, I have been successful, yet ancient usage is frequently quoted as a present right; the ditches themselves being town property are out of my surveillance.

“Again, the crowded state of the dwellings among the poor is another and a great source of nuisance; frequently I find from 12 to 20 small tenements erected in a small square or yard, and these belonging to four or five different proprietors, while there may be but one convenience, and that disgusting and filthy; the difficulty of effecting a removal, or causing additional erections, will be sufficiently apparent.

“I have this day inspected a range of buildings, 12 in number,



immediately fronting the Dudley-road, inhabited by very poor people, at a rental of about 2s. 9d. per week, among which there does not exist a single privy or ashpit, consequently, in the early part of the morning, we find the filth in the open street or gutter waiting for some favourable rush of water to carry it away. A very great deficiency of water for the poor in many parts is another sad ground of complaint; in some cases they cannot obtain any, except from the nearest town pumps, which may frequently be at a most inconvenient distance. There prevails also a sad practice of letting a great many tenements to the lowest class of Irish, without reference to anything but the collection of the weekly rents. These buildings, with all their yards and out offices, are of the most filthy description. I have taken a census of 31 houses belonging to one individual gentlemen, 29 of which have only one small room up and one downstairs, at the furthest 9 feet square; in these dwellings, by their own admission, there are, living and sleeping, 283 persons; adults, 152; children, 131; and out of this number 94 are lodgers, crammed into the least possible room, without any reference to sex.

“ Their beds are chiefly composed of hay, straw, or shavings, without any apparent linen or woollen covering, other than what they wear during the day; these wretched beds, when rendered by use even more filthy than themselves, are either burnt or thrown upon the mixture to rot in the atmosphere.

“ Fever frequently prevails in these localities.

“ In several instances the most infamous nuisances are in existence, but in consequence of the crowded state of the buildings it is impossible to remove them without pulling down some portion of the rented property.

“ Butchers’ slaughter-houses are in existence in the centre of the town. It is a general habit here for them to keep a quantity of swine, which they rear upon the offal, boiled with Swede turnips; this is a very great and offensive nuisance, but for two reasons I cannot effectually remove them; first, the backwardness of the complaining parties to sign the required information against them; and secondly, the insufficiency of my powers to order a removal without it. In some few instances, by a friendly intimation, the boiling of offal has ceased, but not generally so.

“ The want of good and sufficient drainage among the poor is much felt, although the general elevations of the town are excellent.

“ Lighting also I consider very deficient in the most densely populated parts, and affords ample opportunity for the escape of thieves, but with that question I have no interference.

“ Generally speaking there is a disposition to obey the law, by a timely removal, after notice has been given, but it requires a constant surveillance or the offence would again be repeated. I have not yet had a single case before the bench of magistrates, while in the neighbouring town of Dudley they have been brought up by dozens.

“ We are sadly at fault for the want of proper vehicles of conveyance wherewith to cart away the refuse, soil, and filth. The landlords and tenants are entirely at the mercy of a set of men that in London we call nightmen; a few years back they willingly gave from 3s. to 5s. a-load to the tenant for the privilege of emptying the cesspools, and I

firmly believe the town generally was then much cleaner than now; but since the introduction of foreign guano these men will scarcely remove a load without being paid as much as they formerly were eager and willing to give, the effect of this is to neutralize the operation of the 24 hours' notice, nor can it by any means be remedied, until the soil, ashes, &c., become the property of the Town Council or the Board of Guardians, by being subject to their own removal by their own servants and conveyances.

"The pumping out of stagnant waters from vaults and cellars, accumulated there from the want of proper sewerage and drainage, is another great and crying evil over which I have no control."

The whole of the evils here complained of would be removed by a properly-arranged system of sewers and drains, with water-closets and soil-pan apparatus substituted for the present privies and cesspools, and a full supply of pure water laid on "constant" to each house.

During the inquiry the chief constable gave me every assistance in the inquiry, and at my request, drew up the following valuable report, as the result of his experience in the town. He stated,—

"The following remarks and statements are founded upon the experience which I have had of the general condition of Wolverhampton during the period (about six years) that I have filled the post of chief officer of police in this town. I have ever found that in those districts where there is the greatest amount of filth, deficiency of comfort, want of proper accommodation in dwellings, and an absence of cleanliness amongst the inhabitants, that there prevails much the largest amount of drunkenness and disorderly conduct. This remark applies more especially to the neighbourhood of Stafford-street, Canal-street, Berry-street, and Salop-street, in which localities the dwellings of the poor are crowded together in confined courts and alleys. These districts are regarded as the most dirty parts of the town; Stafford-street has gained an unenviable notoriety by the number of disturbances which have there taken place from time to time. I have frequently been obliged to remove policemen from other parts of the town, and place them in Stafford-street, in order to maintain tranquillity in that neighbourhood. The great majority of the lower classes living in this locality, are Irish, and whenever any disturbance takes place, these overcrowded lodging-houses pour forth their inmates in almost incredible numbers, attacking a single policeman or two, with great ferocity and savageness, but being equally expert in beating a retreat when faced by a sufficient force to repel their lawless proceedings. I have at times been compelled to have as many as 20 men parading the street with cutlasses, to assert the supremacy of the law. The majority of commitments from this part of the town, are mainly for offences against the public peace, and not for the crime of felony; the number of commitments of that kind being comparatively few. The neighbourhood of Stafford street is crowded with public houses and beershops, kept open up to a late hour at night, and I am of opinion, after an experience of six years in this town, that many of the poorer classes are tempted to spend their time and money in these places from the total want of comfort at their own houses; indeed many



of them have told me, after having been turned out of the public house, and ordered to go home, that the place in which they lived was in such a miserable state that they would rather remain out in the open air if the weather was not severe. I must, however, remark that a great improvement has lately taken place in the state of the streets on Sundays. Formerly on the sabbath morning the streets were crowded with drunken men and women, but since the recent Act has come into operation requiring publicans to close their houses at 12 o'clock on Saturday night, the streets on Sunday morning have become comparatively quiet. This observation applies to the town and district generally; and by reference to the police books, it is found that the number of drunken cases brought before the magistrates, have greatly decreased since the introduction of this salutary enactment of the legislature. With reference to the crowded state of the lodging-houses in those localities to which I have adverted, I may remark that there can be no doubt that the habitual mixture of all sexes and ages in such houses, tends greatly to disseminate vice and demoralization of every kind, and to impart to the young, especially, a total disregard for those decencies of life which prevail among the more favoured classes of society. Most of the houses to which I refer, are not provided with any place for the recreation and amusement of the children of the poor, and consequently they are to be found in different parts of the town, some begging and others thieving, whilst many of them become the associates of older persons, too well versed in crime, and are thus gradually led on to the commission of graver offences. The number of persons transported from this town within the last six years has been very great. Many of the inmates of these lodging houses are to be seen in the streets on Sundays in their tattered and dirty clothes, standing at the corners of the streets as the respectable inhabitants are on their way to church, and gazing with apparent indifference at what is passing around them. Such was the total disregard for the observance of the sabbath in the neighbourhood of Stafford-street, that until recently, Sunday trading was almost universal, many of the shopkeepers being obliged to keep open their shops to accommodate their customers on that day, or lose them during the other parts of the week. The mayor has now put a stop to the system by a public proclamation, expressing his determination to fine all persons offending against the law with respect to Sunday trading. This intimation has had the desired effect, and the shops in question are now closed on the sabbath day."

*BILSTON. Present State and Condition of the Town.*—During my inquiry and personal inspection of Bilston, I had the assistance of the Rev. H. S. Fletcher, the Rev. J. B. Owen, and the Rev. W. Heafield, Mr. W. Baldwin, Mr. J. B. Dimmack, Mr. T. Perry, Mr. Mathew Frost, surveyor of turnpike roads, Mr. Edward Best, Messrs. Hawkesford, Mr. Bew, Mr. Hutton, Mr. P. Pearson, surveyor of highways, Mr. John Dean, Mr. James Price, Mr. Twigg, Mr. Whitehead, Mr. Baker, Mr. Sargent, Mr. Marrian, rate collector, Mr. J. Fellows, parish constable, Mr. Johnson, relieving officer, and others.

Bilston in 1832, was visited with cholera in a most severe form, as the tables given under the heading mortality will show. There



is no local Act in force in the town for its government ; there are neither sewers or drains, or any general plan, the brook receives the contents of such drains as exist, and altogether there has not been much improvement since the visit of the cholera in 1832. Mr. Mathew Frost, surveyor of the turnpike roads, stated :—

“ The outlet for the present drains is into Bilston Brook. The brook is in a very bad condition, as bad as it possibly can be. There is plenty of fall to be obtained, if it could be kept clean, but at present the flow is impeded by the mud which lays in it.

“ The town makes no use of the brook refuse at present, but some of the farmers below flood their meadows with it ; 60 or 70 acres near Wolverhampton, were flooded with refuse from that town, which I have been told was recently cut off, and the tenant claims 1*l.* per acre per annum as compensation.

“ I have no fear in saying that any land would be increased in value 1*l.* per acre by liquid refuse. I do not think there would be any claim made from the landholders if the sewerage was removed from our brook.

“ I have looked at the town with an eye to its being drained, and I do not anticipate any serious difficulty in carrying it out. The town of Bilston stands about 30 feet above the brook.

“ The existing drains have been made by landowners, by the trustees of the turnpike roads, the surveyor of highways, and by private subscription ; but all of this is imperfectly done. The drainage from private premises is very bad. There are many houses erected in confined situations, where the necessary conveniences cannot be carried out ; one in Wolverhampton-street, for instance, where there are eight houses, and no privy ; but all the tenants have to use one in a neighbour's yard. I was about to purchase this property some time ago, but from its inconvenient and filthy state, I declined to purchase it.

“ I believe that this neglected state of things tends very much to depreciate property so erected.”

Mr. Frost owns cottage property at present, and his opinion is, consequently, of value. Many owners of such property will not allow themselves to consider the benefit they must derive from improvements which are general, and then cry out against any form of alteration, but it is Mr. Frost's opinion, “ that it would be of great advantage to the landowners, and owners of property ; that they should be compelled, if necessary, to lay out streets and courts to a wise and proper plan, and to build so as to insure ventilation and provide the requisite accommodation. If this power had been in existence some years ago, much objectionable property now erected would not have been allowed.” There is a disposition in times of prosperity, when work is brisk, and a demand for cottages increases, to run them up slightly, and Mr. Frost stated, that “ cottages, much better than many erected, may be built for 60*l.* each. Kitchen, back kitchen, two sleeping-rooms, a brewhouse to two houses ; and for 10*l.* more, a third room in the attics, one privy, a good one, for each two houses :

these would cost about 4*l.* for the two privies; these houses would let for 2*s.* 6*d.* per week. In cases of great prosperity houses of any kind will let; but when there is choice the best only will be taken, excepting parties who have long occupied an old house, and then they do not like to leave it."

Land, such as is used for cottage building purposes, was stated to be worth from 2*s.* 6*d.* to 5*s.* per square yard.

The present condition of Bilston Brook was a general cause of complaint, and *Mr. E. Best*, surgeon, stated—

"I have paid attention to the district in the neighbourhood of the brook spoken of, and it is my opinion, that it is detrimental to the health of the inhabitants. I should have no difficulty in predicting the places where typhus will be found, and where it does exist the cause is easily discerned. In 1832 the cholera commenced in the neighbourhood of the brook, and I have no doubt this was the immediate cause of its visiting Bilston. After lingering in the vicinity of the brook about a week, it settled upon those parts of the town where the drainage was worst."

The opinion of *Mr. Best* on the economy of proper sanitary works is very decided.

"The proposed sanitary works, if carried out as suggested, would not be oppressive; but to the community at large cheap and economical."

Opposition to sanitary improvement is generally denounced by those who fear the slightest increase of expense. They will not even see a gain of 2*l.* by a wise expenditure of 1*l.*, because the result is not immediate; but those who have felt the effects of the present evil fully understand the fearful results.

"It is known and understood by the respectable part of the town, and many of the working classes, that the existing state of things does produce typhus, and will generate cholera. We have had no cholera this year, but more diarrhoea than is usual. More than ordinary exertions have been made by the local authorities to remove nuisances under the Removal of Nuisances Act; it has had a partially good effect, but is by no means what we ought to have, it cannot put us in the sanitary state we ought to be in."

I must here bear my testimony to the great desire there was evinced by all parties to carry out to the fullest such precautionary improvements as the Removal of Nuisances Act placed within the reach of the authorities. The Rev. J. B. Owen stated—"that everything which could be done under that Act, and fully to the extent of their existing powers, had been done by the Board of Guardians, and by the local Sanitary Committee of the municipal body of Wolverhampton in particular. As far as existing powers would carry them, they had done their duty." The reverend gentleman himself had, I know, laboured to the uttermost, and had been the means of effecting very much of the improvement carried out; he stated, that "if a clergyman could properly dis-



charge the duties of a surveyor for the year ensuing, he should be quite prepared to take his share of the labour, and of the responsibility, in carrying out any plans for the public good;" as he also stated, "So long as the brook nuisance existed it would continue to be a disgrace to the town." Mr. Dimmack remarked, "that few towns of the magnitude of Bilston were without a local, controlling, and governing power," and said "this was very much required, and that they looked naturally to the General Board of Health to grant them cheaply what they so much needed, namely, the means of doing their own work effectively."

As the amount of out-door relief is a good test of the condition of a district, and the experience of the relieving officer is always, on this head of the inquiry, valuable, I give that of Mr. Johnson, relieving officer for the district; he stated—

"That in Bilston, Willenhall, and Wednesfield, there were about 40,000 inhabitants, and that the amount paid for the three parishes is about 50*l.* per week. I invariably find it necessary to expend the greatest amount of relief in the worst drained and most crowded districts. I have to get my clothing examined after visiting these places, and frequently vermin is found upon them."

The testimony of all parties who have examined the subject goes to show the utter carelessness there is shown on the part of Irish families to preserve a pure atmosphere; uncontrolled, they will crowd their dwellings to an extent fatally injurious to their own health, and expensively injurious to the rate-papers in general. This witness states—

"I have seen 27 Irish—men, women, and children, sleeping in one room about 14 feet by 11 feet: there were two pairs of bedstocks with bundles of straw, and some were on the beds; some partially under them, and some on the floor.

"The districts inhabited by the Irish are always more filthy than the other portions of the town."

The mining operations in some measure deteriorate the houses by letting in the ground and throwing houses down; control is very much required over the lodging-houses. On these heads *Mr. B. Marrian* stated—

"There are about 4,400 houses in Bilston; there are about 200 in ruins from the effects of mining operations and railway making; but others have been erected to supersede them. I wish to bear my testimony as to the filthy state of the houses, and the numbers crowded together in one house; there is no control over the public lodging-houses, which is much needed."

The public lodging-houses in the whole district are as bad as they possibly can be, they are frequented by the worst characters, are without means of ventilation, the beds are crowded together, and there is no care to preserve a separation of the sexes, although many who take lodgings in them are strangers to each



other. I made a personal inspection of the district, and found a general want of privy accommodation. The courts were undrained and unpaved, and accumulations of ashes were in many places a great nuisance to the inhabitants. The following is the evidence of *Mr. John Dolan*, inspector of nuisances, who stated—

“ I find the district very bad indeed in places; down Quarry-lane there are 11 houses with no privy to them. In Priestfield there are 16 houses with only one privy. These belong to *Mr. Morris*; the rental is from 2s. 6d. to 3s. per week. There are many houses here charged 3s. which are not worth 1s. per week.”

There were several complaints made as to the high rents for cottages, without sufficient or proper accommodation to them, as the following from *Mr. Frost*, who stated that—

“ The avariciousness of the landlords will not allow them to set apart the room necessary for proper conveniences, and I think the whole community should not be burdened with this state of nuisance because of their negligence.”

With regard to the Bilston brook, the *Rev. J. B. Owen* stated—

“ That there was great difficulty in the matter of cleaning it, as its ownership was disputed; every means had been taken that ingenuity could devise to remove this nuisance, but without coming to any satisfactory conclusion.”

EXTRACTS from NOTES of a PERSONAL INSPECTION of BILSTON, accompanied by the *Rev. J. B. Owen*, *Mr. Hawksford*; *Joseph Best*, *John Fellows*, Constables; *Mr. Marrian*, Collector of Poor Rates, and others.

Noticed *Bilston Bridge Works*.—There is an open reservoir of hot water from a condensing-engine, the vapour of which is carried over several houses, and must be injurious to the health of the inhabitants. There is a house built over the brook, and in *Brook-street*, there are open drains blocked up at the end. The surface is level with the brook. In this neighbourhood typhus is never absent.

The brook at this point is stagnant, it used to be three or four steps down, but has been raised up level by the constant accumulation.

There is a great want of pavement in the district, the roads are very dirty.

The constable says many robberies are committed for want of light.

*Birches-buildings, Winn's-fold*.—There is no pavement or drainage here, but open middens and filth; and here the cholera raged in 1832.

Inspected *Quarry-lane*.—There is neither pavement, privies, nor drains here.

*Black Horse-fold*.—The surface is uneven and in heaps; there is no light, no drains, and the privies in ruins.

**PORTOBELLO :** *its present State and Condition.*—The population of this place is about 2,200, consisting chiefly of miners and their families; there are no effective drains or sewers, and many of the cottages have been run up in a very slight manner, without proper conveniences. There are about 400 houses in the district, but the population is rapidly increasing. There were stagnant ditches, pools of filthy water, and dung-heaps throughout the village. I visited a house in which the whole family had been ill of fever; in another small house a child was dying of fever; the close smell of the room was almost unbearable, and yet it was crowded with people around the moaning child. In the midst of this wretchedness there was one block of cottages remarkable for their neat and clean appearance, the surface of the yards were paved with the blue bricks of the district; each house had proper convenience, and they looked as neat inside as they were clean outside: these cottages had been built by the Rev. J. Y. Rooker, incumbent of Lower Gornall. They offered a striking contrast to the wretched and neglected property in their neighbourhood, and gave a pleasing indication of what such cottages could be made with proper care and attention.

**WILLENHALL :** *its present State and Condition.*—There are about 11,000 inhabitants in Willenhall; the Tame Brook runs close past it; there is no general system of sewers or drains. At Little London end of the town, there are stagnant ditches full of soil, immediately in contact with cottages; middens, pigsties, and other nuisances are common throughout the town.

**WEDNESFIELD :** *its present State and Condition.*—There are about 3,500 inhabitants in Wednesfield, and it is increasing; it is at present a straggling village without any system of sewers or drains, and abounding in nuisances common to this state of things. Some parts of the streets are unformed and unpaved. These small towns are not at present overcrowded, and if proper attention is paid to the formation of streets, they may grow up into regularity and symmetry instead of becoming confused and inconvenient assemblages of houses.

The drainage of each place must be a distinct work, but it can scarcely be accomplished under divided and separate management. But I will refer to this in the remedial measures proposed.

**LIST OF MARKETS AND MARKET DAYS IN WOLVERHAMPTON.**—The franchise for holding a market within the borough was attached to the deanery of Wolverhampton, and is now vested in the Ecclesiastical Commissioners.

The market tolls were some years ago leased to the Duke of Cleveland, and subsequently underleased to the Town Commissioners. The usual market day is Wednesday, but a large market

is held each Saturday for the sale of butcher's meat and other necessities.

A new cattle market has recently been opened on the outside of the town. This market is the property of the Commissioners, and it is stated that it will yield a return of 10 per cent. on the capital expended. The horses and cattle formerly stood in the streets, to the great annoyance of the public, and frequently to the injury of the beasts. It is situate between the Cleveland-road and Bilston-street, and adjoins the east side of St. George's churchyard. It occupies about four acres of land, and will afford accommodation for 450 horses, 1,000 cattle, 5,200 sheep, and 4,000 pigs. The whole length of the western boundary is a covered shed for horses in wet weather, or at other times if required; and on the eastern side are covered pig-pens for small pigs, and for "lodging houses" for fat pigs. There are three large gateways from the Cleveland-road, opposite to the three main avenues, or roads through the market; two of these have corresponding gateways leading into Bilston-street, and a third is intended to be opened at a future time. The market is thoroughly drained and trapped, and the surface is all laid with proper currents so as to be readily washed down and cleansed. The water from the Water-works Company is laid on in several different places for supplying the beasts and for cleansing the market. The market has been constructed under the directions of Mr. Edward Banks, architect.

**FORMATION AND REPAIRS OF STREETS AND ROADS WITHIN THE BOROUGH OF WOLVERHAMPTON.**—The Town Council and the local Board of Highways exercise a divided authority within the district, as the repair and cleansing of the several roads and streets within the municipal borough is performed by the Town Council and the local Board of Highways. Those streets within the limits of the Town Act being repaired and cleansed by the Town Council acting as Commissioners under the Town Act, the highways without the limits of the Act being repaired by the Board of Highways, whilst those streets and roads which are not deemed highways, and are not within the limits defined by the Town Act, go totally unrepaired, and are in a very neglected state.

In the repair of the streets and highways 28 men are employed, 25 by the Town Council, and 3 by the Board of Highways. Ten of these men are scavengers. There are also two of Mr. Whitworth's sweeping-machines in constant use.

The following tables will show the number of men employed, and the amount of money expended on each department for the year 1848:—



TABLE of Men, Horses, Carts, and Sweeping Machines employed by the Town Council, and the Board of Highways in Repairing, Cleansing, and Watering the Streets and Roads.

By whom Employed.	Number of Men Employed.	Number of Sweeping Machines.	Number of Horses and Carts.	Number of Masons and Paviers.	Remarks.
The Town Council employ . . .	25	..	..	..	{ Ten of these men are scavengers.
The Board of Highways employ .	3	..	..	..	
Carts, Horses, and Men employed by Council . . . . . }	7	..	7	..	{ Repairs and scavenging.
Ditto, ditto, by Board of Highways	1	..	1	..	
Machines employed by Council .	..	2	..	..	Sweeping streets.
Masons and Paviers employed by the Town Council . . . . }	..	..	..	3	Repairing streets.
Total . . . . .	36	2	8	3	

TABLE of Money expended on Roads and Streets for the Year 1848.

By whom Paid.	For Scavenging.	Repairs to Streets and Roads.	Water for Streets, Roads and Cattle Market.	Repair of Roads.	Remarks.
	£.	£.	£.	£.	
By the Town Council . . . . .	728	..	..	..	{ For labour. Labour and materials.
Ditto, ditto . . . . .	..	2,772	..	..	
Ditto, for watering streets and roads	..	..	225	..	For water.
Ditto, for cattle market . . . .	..	..	50	..	Ditto.
By the Board of Highways . . .	..	..	..	400	{ Labour and materials.
£	728	2,772	275	400	
Or a total of . . . . .	£4,175				

This sum of 4,175*l.* is exclusive of work to new streets and footways; the flagging and paving of which is generally done by contract, or by men specially employed. There are also several turnpike-roads within the borough, which are repaired and watered by the respective Commissioners, the cost of which cannot be obtained.

Great inconvenience is suffered by all parties in the town because of the divided authority at present in existence. The expense is necessarily much increased, and the work most imperfectly performed. Mr. Alderman Henry Walker, chairman of the local Sanitary Board, stated:—

“I have paid especial attention to the present condition of the town. We have no power over the existing highways under the present local

Acts, and this causes much of the present filth; one-third of the town have no pavements; being new, and we have no power over them, these streets have to be repaired under the local Town Act, because the owners have not put them in that state the Act requires. There does not seem to be any powers in the local Act to enforce its own clauses. There is no penalty attached. There is also very considerable doubts as to the power to levy an highway rate in the town at all; and, consequently, in these streets; and the town rate cannot be levied in these streets, because they are neither lighted or cleansed: the consequence is, there is no fund strictly applicable to the case of these streets. An highway rate has been levied, and in some cases paid, but it cannot be applied to the repair of these streets because they are not highways, consequently the inhabitants are in the anomalous position of having either to pay or litigate the rate levied, although no portion of it is expended on the streets in question."

This want of power to levy a common rate, and, when required, a special improvement rate, is very generally felt over the county; power to levy a sewer and paving rate over all property built upon, or set apart for building purposes, would be the greatest boon that could be granted to landowners, provided the necessary work is economically and well done. The amount expended on a new street, properly sewered, paved, and lighted, would be a direct premium added to the value of the property, giving an immediate increase of money value, and saving a vast amount of future loss in depreciation of property by accumulated filth, and, indirectly, saving much pecuniary loss to the inhabitants, by giving improved health, and probably saving many premature deaths. There would be a general saving to the community in scavenging and poor's-rates.

**BURIAL-GROUNDS IN WOLVERHAMPTON.**—There are three churches, and one or two chapels, to which burial grounds are attached, all of which are more or less filled; and, upon the completion of the suburban cemetery, the whole should be closed. An official inquiry took place as to the condition of the several burial-grounds in 1846, and a report upon them was drawn up by Mr. G. Hammond Whalley, from which it appears that in twelve years, from 1835 to 1846, both inclusive, there was a total amount of 13,073 funerals in the burial-grounds of St. Peter's and new burial-ground, St. John's, St. George's, the Catholic chapel, the Independent chapel, and the Baptist chapel. With respect to the Roman Catholic and Dissenting chapels, there is no regular register kept. Several of the surgeons in the town gave evidence as to the unhealthy condition of the crowded grave-yards. Mr. John Fowler stated, "that any person living in such a neighbourhood would readily catch any contagious disease that might arise in the town;" and he mentioned a case where a whole family had perished: "they lived near to a part of St. Peter's church-yard, where paupers were buried superficially, quite close to the

surface." "He believed the fever arose from that circumstance."

**BURIAL-GROUNDS IN BILSTON.**—There are in Bilston burial-grounds at St. Mary's, St. Leonard's, at the Wesleyan chapel, and a small burial-ground in connexion with the Baptist chapel. St. Mary's was described as "full," but St. Leonard's was said not to be so. A large portion of St. Mary's was used in 1832 for the burial of cholera patients, and, by the provisions of an Act of Parliament, this ground cannot be opened for 20 years. The burial-ground attached to the Wesleyan chapel was described as "quite full." There had been about 5,000 interments in it within the last 25 years. The Baptist burial-ground is small, and was described as "crowded;" a school-room has been built over a part of it. The Rev. H. S. Fletcher, incumbent of St. Leonard's, stated that, "in his opinion, some new place of burial was necessary, and that immediately; as, if the cholera should unfortunately again visit Bilston, and rage as it did in 1832, he did not know where they would inter the dead."

**BURIAL-GROUNDS IN WILLENHALL.**—There is a burial-ground attached to the church, and also one to the Baptist chapel; both were described as "full." The Rev. G. H. Fisher, incumbent of Willenhall, stated that the burial-ground attached to the church was "full to repletion," and therefore a new burial-ground was indispensably requisite. He said, "We always commence grave-digging, in the present ground, with fear and trembling." There had been a long correspondence with the Ecclesiastical Commissioners on the subject of a new burial-ground, but no satisfactory result had been arrived at.

**BURIAL-GROUND IN WEDNESFIELD.**—The church-yard in Wednesfield is quite full. It was stated by one of the gentlemen, that the ground was so full in every direction, and had been so frequently dug over, that, should the present sexton die, he did not know how they would find room to bury him; great anxiety was expressed to obtain a new site for a cemetery.

During my inspection of the several church-yards and burial-grounds, every information and assistance was afforded by the respective clergymen.

**WOLVERHAMPTON GAS WORKS,** for Lighting the Town of Wolverhampton and the neighbourhood, the Township of Wednesfield, and the Parish of Tettenhall. (Present Act, 10 Vic., sess. 1847, called the Wolverhampton Gas Act, 1847).—The old Company was established by Act of Parliament in the year 1820, with a capital of 10,000*l.*, and power to raise 5,000*l.* additional. 11,000*l.* was expended, which was provided for by a creation of 550 shares at 20*l.* each, and the Company contributed out of the



profits of such Company further sums of large amount for the purpose of extending the works, and for other purposes.

December 15, 1845, a new Company was registered, called "The Wolverhampton, Dudley, and Bilston, Gas Light and Coke Company," for the purpose of supplying and lighting with gas, amongst other places, "Wolverhampton, Wednesfield, and Tettenhall." This new Company was authorised to raise the sum of 30,000*l.*, in 3,000 shares of 10*l.* each. Before this second Company established any works, the two were incorporated by Act of Parliament (10 Vic., 1847), under the title of "The Wolverhampton Gas Act, 1847." The nominal capital of the united Company is 44,480*l.*, in 4,448 shares of 10*l.* each, with power to borrow upon mortgage any sum not exceeding in the whole 10,000*l.* The number of Directors, according to the Act, may be nine; the necessary qualification, 20 shares at 10*l.* 15 shareholders to be a quorum of a general meeting, if they hold in the aggregate 150 shares. Remuneration to Directors, such sum or sums of money as may be fixed by a general meeting of proprietors.

The works have been extended from time to time to meet the requirements of the town.

The price of gas at the commencement was 15*s.* per thousand cubic feet; subsequently reduced to 12*s.* 6*d.*, 10*s.*, 8*s.* 4*d.*, 6*s.* 8*d.*, and is now 5*s.*, and, to large consumers, 4*s.* 6*d.*

There are 411 public lamps, lighted from September 15 to April 30, less five nights each moon, when only a part are lighted. The Company receive 2*l.* 16*s.* 4½*d.* per lamp, for which they find every thing.

Orders have been received within the last week for 38 additional lamps, and the Town Council contemplate erecting and lighting many more in those streets at present in darkness.

*Works.*—Four gas-holders, capable of containing together 145,000 cubic feet of gas.

76 retorts, capable of producing 240,000 cubic feet per diem.

Lengths of mains, 23,028 yards, extending to the outskirts of the town in every direction.

Make of gas last 12 months, 35,524,000 cubic feet.

The gas is tested daily for impurities. It is quite free from sulphuretted hydrogen and carbonic acid, but contains a small amount of ammonia, but to an almost inappreciable extent.

An apparatus is now in a forward state of erection to extract, as far as practicable, all the ammonia.

The illuminating power of the gas averages 13·50 candles, spermaceti, six to the pound.

The purifying power of the works is excessive, being equal to a daily make of 400,000; whilst the greatest make last mid-winter in one day did not exceed 215,000.

The Company have just concluded contracts for machinery in-

tended for a new auxiliary works to be erected during the approaching summer, which, when completed, will enable them to supply three or four times the present demand, should it be required.

The lamps are not lighted for three nights before full moon, the full, and one night after.

There are at present about 40 streets without lights, and some of the street lamps are 80 yards apart. Courts and passages are not lighted.

Street lamps should not exceed 40 yards apart, and be set alternately on each side the street; that is, the lamp on one side should stand opposite the centre of the space on the other side.

**BILSTON.**—This town is partially lighted with gas at a cost of 6s. each 1000 feet to small consumers, and 4s. 6d. each 1000 feet to large consumers. Back streets and courts are not lighted; few of the public streets are lighted.

**WILLENHALL.**—There is gas laid into the town, but there are no public lights.

**WATER SUPPLY TO WOLVERHAMPTON.**—Like all other towns which stand on the new red sandstone, water is easily obtained in the town and district by means of local wells and pumps; but as these necessarily become vitiated, as a town increases, with an infiltration from drains, ditches, cesspools, and not unfrequently graveyards, other sources of supply are sought. This has been the case in Wolverhampton; many of the old wells and pumps have had to be abandoned, or the water can only be used for washing the surface of the yards and for other similar purposes; or, rather this ought to be the only use to which it should be put, if used at all; but the temptation to put it to other uses is frequently too strong, in the absence of a better supply; and this must necessarily act injuriously upon the health of the inhabitants.

*New Company.*—In the year 1845 a Company was formed, and an Act was obtained to establish a water-works, for the purpose of supplying the town with water. The site chosen for the works was Tettenhall, a small village about two miles to the west of Wolverhampton. Mr. H. Martin, the engineer, stated that they were capable of supplying 50,000 inhabitants, at the rate of 16 gallons a-day each.

“The water is obtained at the works at Tettenhall, from a spring in the new red sandstone formation, which lies about 118 feet below the surface of the ground. The bottom of our well is about 20 feet below the surface of the spring, making the total depth of the well 138 feet below the ground line.

“We were prohibited from sinking deeper than this level, lest by so doing we should draw off the water in the Tettenhall pound of the



Stafford and Worcester Canal, which lies about half a-mile distant from the works. From this main, or pump-well, various large drifts or headings were driven in those directions in which we found the greatest come of water.

“ These are about half a mile in extent, and are for the purpose of increasing the area for percolation, and to afford storage room, being capable of accommodating about 350,000 gallons. The rate at which the water was coming in on the suspension of our under-ground operations was about 300,000 gallons per diem.

“ We have not had occasion since that time to draw the water below the top of the headings, and I am therefore unable to say the rate of the present ‘ come.’

“ The pumping machinery consists of two single direct action Cornish engines of 50-horse power each, and lifting 56 gallons per stroke, and capable of working 10 or 12 strokes per minute. Two sets of pump-work plungers 13 inches diameter, and 9 feet 6 inches average stroke, and a stand-pipe 180 feet high, over which the water descends into the town.

“ The supply of the town is performed through a leading main laid down the Tettenhall-road, of which the first 400 yards is 13 inches, and the remainder 12 inches, until it reaches the bottom of Darlington and Salop streets, where it branches off into two 10-inch trunk-mains. From these smaller mains branch off, as occasion requires, varying from 9 to 6 inches in diameter. and are so tied together, that should any one of them be shut off for repairs, the service of the town may still go on through the others.

“ As the town was laid out for an intermittent supply, there is an extensive system of services, of 3 and 4 inches diameter, and each commanded by a stop-cock placed on its junction with the main.

“ In the fire department there are 30 plugs on the main, and 97 on the services ; in all 127 plugs, or  $\left(\frac{6500}{50}\right)$  about 1 to every 50 houses.

“ The town water-carts are supplied from 14 stand-posts, and the New Cattle Market from 17 stand-cocks.

“ The length of pipage laid down under the original contract was 10,453 yards of main, from 13 to 6 inches diameter, and 14,742 yards of services of 3 and 4 inches diameter. Since the closing of this contract the Company has laid down 4,544 yards of additional services, making now, in all, a total of 29,739 yards, or about 17 miles of piping.

“ The dead pressure on the pipes at the lowest part of the town is 200 feet, and at the highest 110 feet ; and the average may be taken at about 150 feet.

“ With the pressure of 110 feet on the highest plug in the town, that on the top of Snow-hill, we find that we can throw a three-quarter jet completely over the steeple of the Irvingite church, which is about 60 feet high. From the plug in the market-place opposite the Swan, where the dead pressure is between 120 and 130 feet, we can throw a three-quarter jet completely over William Parke’s house in Dudley-street, which is about 50 feet from the plug, and 50 feet high.

“ By experiments conducted at the same time for the satisfaction of a Birmingham Fire Office, we found that we could throw the water half



as far again as their engine from our jet, and that with one plug only open we could supply as much water as would suffice four of their engines.

“Our present mode of supply is a combination of the intermittent and constant systems; the water being on, on Tuesdays, Wednesdays, Thursdays, and Fridays, each day to every house from 7 o’clock in the morning until 5 in the afternoon, and from Saturday morning until Monday afternoon; the supply is in all respects constant, as everything is left open.

“It is the intention of the Company, so soon as they can obtain the additional power, to construct a reservoir on the top of Goldthorn-hill, and then revert altogether to the natural system of constant supply, which is the more economical both to the Company and consumer.

“If we were supplying our full complement of tenants our pressure would of course be reduced, but we should still have an ample head. For, presuming we were supplying 50,000 tenants with 16 gallons per diem each, and that we had a reservoir at the top of Goldthorn-hill, from which we can command a head of 92 feet above our highest plug; and presuming that these tenants were to draw off their daily supply in 6 instead of 24 hours, passing the water through a 13-inch main, we should still have a pressure of 40 feet left at the top of Snow-hill, and much more on the lower parts of the town. And presuming that experience should lead us to infer that the inhabitants might draw off their supply in four hours, only by laying down a 16-inch instead of a 13-inch main, we could still preserve the same pressure as when the water was being drawn off six hours.”

The Company have not found that demand for their water which was anticipated, as those parties who have pumps adhere to the use of them. The intermittent system of supply must in a measure militate against a full demand, as parties within reach of a pump can obtain water at the time they require it, but they cannot do so from intermittent works. They must also go to the expense of providing cisterns or tubs in which to hold the water from day to day. Water from the new red sandstone is also hard, generally ranging from 16° to 21° of hardness. A good and economical water should not exceed 4° of hardness; a difference of 12° of hardness, that is, a water of 4° in place of one of 16° of hardness, would save to the inhabitants of Wolverhampton in soap alone, about 7,000*l.* a year, and more than double this sum in its use for all purposes, such as making tea, brewing, and for generating steam.

**BILSTON WATER-SUPPLY.**—The town is but partially supplied from the Dudley Water-works. The supply is intermittent, three days a-week. Many of the inhabitants take their supply from the neighbouring canal; some is obtained from a spring, and some is pumped from a pit. Mr. Bew, chemist, stated that he did not consider the Dudley Company could give the town a full and constant supply; but Mr. Holt, engineer to the water-works, stated they were putting down additional engine-power, and should, if

required, be enabled to give the full quantity. It was the opinion of the gentlemen present, that if this could be accomplished, a compulsory clause or general rate would not be oppressive, as described by the Public Health Act. The water at present supplied from the works is taken to stand-pipes, and is not conveyed into the houses.

**PORTOBELLO.**—In consequence of the mining operations water is very scarce here, and surface-water, much vitiated, is drawn from ditches and a small brook, and used. It was stated by the inhabitants that this brook frequently was choked with refuse, and even dead dogs, and yet they could not get better water without fetching it from a long distance, so they filled a bucket or mug, and let it stand to settle before using it. One landlord stated that he had expended 100*l.* on a well, in the vain attempt to obtain water, which is certainly very much needed.

**WILLENHALL** is much in the same condition as Portobello, the mines having robbed most of the surface springs, and there are no public works to afford a supply. There can be no doubt but that much disease and suffering arises in consequence of a want of water, and from using bad and highly vitiated water. A full, copious, and pure supply is very much needed in the district, and there is every reason to believe that works on a scale capable of furnishing the quantity requisite, would, at a moderate charge, not exceeding 5*s.* annual for each cottage, produce a good dividend.

**PUBLIC SCHOOLS, WOLVERHAMPTON.**—There are six churches, and a school to each. There is a grammar-school, blue-coat-school, and both day and Sunday-schools attached to the several dissenting chapels. Until within the last four years there were only two schools attached to the churches, and the new ones, I was informed, had been called into existence by the aid of the Government grant. Mr. Barker has recently built and endowed a school at his sole expense, for the children of his numerous workpeople.

#### CONSTITUTION OF LOCAL BOARDS OF HEALTH.

*Wolverhampton.*—The Town Council will be the Local Board of Health, as the Act directs.

*Bilston.*—I beg to recommend that the Local Board of Health in this town shall consist of seven members, chosen as the Act directs.

*Willenhall.*—I would also beg to recommend that the Local Board of Health in this town shall consist of five members, chosen as the Act directs.

*Wednesfield.*—I beg to recommend that the Local Board of Health in this town shall consist of five members, chosen as the Act directs.

Although a separate Board is recommended for each town, it

will be most desirable that one engineer should have charge of the whole works, as this will tend most materially to insure efficiency of management, and economy in the superintendence, as the smaller places could not, without an extravagant cost, secure a competent engineer for each.

#### PROPOSED BOUNDARY FOR THE PURPOSES OF THE ACT.

*Wolverhampton.*—It is the wish of the Town Council of Wolverhampton that they should confine their operations within their own boundary, which is separate and complete, for purposes of sewerage. I therefore beg to recommend that the present boundary of the municipal borough be the boundary for the purposes of the Act.

*Bilston.*—I beg to propose that the township boundary be also the boundary for the purposes of the Act.

*Willenhall.*—I also suggest that the township boundary of Willenhall be also the boundary for the purposes of the Public Health Act.

*Wednesfield.*—I would recommend that the township boundary of Wednesfield be also the boundary for the purposes of the Act.

The townships of Willenhall and Wednesfield contain a larger area in proportion of agricultural land, but the Act has made an especial provision for this state of things, and as the population of the district is rapidly increasing, it will be for the benefit of the general community that the whole area should be included.

#### REMEDIAL MEASURES PROPOSED.

**WOLVERHAMPTON DRAINAGE.**—The sewerage of the town will be comparatively light, as the falls are good both to the east and to the west; the new outlets may be divided, and consequently the sewers may be a minimum size; pipe tile drains will serve for most parts of the town. In many instances the new sewers may traverse the lines of present drainage, which have been pointed out by Mr. Martin, civil engineer. On the west side of the town there are six out-falls, and five on the east side.

Of those on the west side the northernmost discharging itself in an open sewer on the left hand side of North-street, the greater part of which it traverses, crosses over into the Wellington-road, and thence flows over the fields a short distance beyond Dunstall-lane.

The next, after having traversed an open course down a lane beyond Molineux house, supplying a putrid and stagnant pool on its way, discharges itself over the fields.

The third and fourth sewers from Wadham's-hill and Darlington-street discharge themselves over the race-course and broad meadows, where the sewage being at times stored in reservoirs



made for the purpose, is made by means of sluices as occasion may require to irrigate the land.

Properly constructed intercepting sewers will require to be made to collect and economize the refuse, and also to prevent its being at any time a nuisance.

The fifth outfall drains the sewage of Salop-street into the Tettenhall-road, and during heavy rains the water forms a broad sheet nearly the whole width of the road at the bottom of Salop-street, which running with great rapidity does much damage to the road.

The sixth outfall takes the sewage of Brickkiln and adjoining streets into Grazy Brook.

On the eastern side of the five outlets four discharge themselves into the Birmingham Canal, namely, Carberry-street, Albion-street, Horseley-fields, and Wharf-street sewers, and the fifth formed by the junction of Canal and Railway street sewers, passes under the canal and thence by an open channel along the Wednesfield-road irrigates the fields on either side.

It will be seen that the number of outfalls at present in existence are considerable, and this will afford the engineer who ultimately surveys and sets out the work the opportunity of choosing the best, and some of those at present in existence may be passed into one intercepting main sewer. Each street must have its sewer or means of connexion; but as much as possible *back drainage* should be preferred, as described in the House Drainage Report, prepared under the directions of Mr. Chadwick. By means of back drainage a considerable length of drain may very frequently be saved, and the refuse of the water-closet and house will not be passed under the floors of the house, but go direct into the drain at once. Each yard and court must have its drain and surface-grate, the gulley to be syphon trapped. "All drains should be trapped as near as may be to their inlets; and the traps, wherever possible, should be accessible, in case of stoppage from improper usage." The down spouts from the houses may pass direct into the drain untrapped; all junctions must be made water-tight, and where two pipes connect, it must be, in one pipe at least, with a curve. The excavation opened for the house-drain or street sewer must also, where practicable, be made to serve for a land-drain as well. This may be accomplished, in some instances, where the quantity of water found may require it, by a second tile-pipe, left open at the joints; but in a general way the space round the drain tile may be kept open by filling in with gravel, or other open and porous material.

**FORMATION OF STREETS AND ROADS.**—All land set out for building purposes should be properly sewered in the first instance and paved, with side channels and gully grates complete; there should also be power to enclose all waste land liable to be covered with refuse, or to become in any way a nuisance.

**KNACKER'S YARDS, OPEN DRAINS, AND CESSPOOLS.**—Knacker's yards should be removed away from the vicinity of inhabited houses; open drains, according to the terms of the Act, must be abolished, and cesspools filled up. The substitution of water-closets for open privies will be found highly advantageous to cleanliness, and much more economical than the present privies; as, if properly used, there will be no annual cost for cleansing or repair, similar to that incurred in a privy and cesspool.

**CHARACTER OF STREET PAVEMENT, SIDE CHANNELS, AND FOOTWALKS.**—The formation of these will depend in some measure upon the material used and the care bestowed upon their superintendence and repair. The whole of the streets and roads of Birmingham are Macadamized; they are regularly watered, and are cleansed with Mr. Whitworth's sweeping machines. This form of street properly attended to is highly advantageous in a town; there is much less noise from passing wheels, and the saving to wheels and carriage-springs is very great; clean streets and roads cannot be too highly prized. If preserved in good order the cross section may be almost flat at the surface, and indented side channels will not be required. This form of street is swept perfectly by the machine. The kerb-stone should not rise more than four inches above the sides of the road, and the footwalks may have an inclination towards the road of one inch in three feet. Round pebble paving is not desirable, either for streets or foot-pavements, as the spaces absorb and retain the wet falling upon the street or pavement.

**STREET IMPROVEMENT.**—The Town Council desire powers to accomplish street improvements, and it will be highly advantageous to obtain this power without the necessity of a special Act of Parliament.

**LIGHTING.**—All streets, courts, alleys, and yards should be lighted at the common cost; as this tends not only to the safety of property, but also improves the morals of the people.

**GRAVE-YARDS.**—The present crowded grave-yards should be closed, and a cemetery or cemeteries, if requisite to have more than one, should be provided; burials within any buildings used as churches, chapels, or places of regular assemblage should be forbidden.

**RECREATION GROUNDS.**—It would be highly desirable to secure land for parks or recreation grounds, and as much as possible to prevent overcrowded suburbs.

**VENTILATION.**—All schools, chapels, churches and public assembly-rooms should be properly ventilated; in all private houses, cottages, and water-closets ventilation should be considered: there should be means of escape at or near the ceilings of all



rooms for to pass off heated or vitiated air, and not left as now to find its escape at the low fire-place.

**LODGING-HOUSES.**—Public lodging-houses should be opened only by licence, and should be subject to a regular inspection. The number of beds in each room should be limited, and the number of persons to each bed; proper means for ventilation should be insured, and a proper separation of the unmarried sexes insisted on.

**BATHS AND WASH-HOUSES.**—In crowded districts public baths and wash-houses will be a great boon to the poor, and, if properly managed, they are found to be, even as a speculation, self-supporting. The exteriors should be plain and neat, and the internal arrangements simple and convenient; ornament, that is not useful, should be avoided. Hollow bricks, as proposed by Mr. Chadwick, may be used for the purposes of baths with singular advantages; they may have, as he has suggested, a neat glazed surface to imitate earthenware tile, so that plaster on the walls or ceilings would not be needed. They may also be used for cottage and house building generally. With a full supply of water, all owners of houses and cottages will find it most advantageous to provide baths and wash-houses in connexion with their property.

**DUST-BINS.**—The conveniences for dust or ashes should be small, and they should be emptied regularly and frequently.

Application of liquid refuse to the land is highly desirable; its great value as a manure is well understood, and the present practice of surface irrigation in the neighbourhood of Wolverhampton is too well understood to need much enforcing. The present mode, however, of using the sewage undiluted, and in excess, is wasteful and, to a degree, injurious to health, as to the land. A well diluted solution of liquid manure should give off no smell within one hour after the dressing has been applied. The refuse of Wolverhampton, properly used, will yield a considerable income.

**BILSTON BROOK.**—The whole of the brook course through the town should be cleansed, and every obstruction to the free flow of the water should be removed; where practicable the bends should be straightened, and one uniform width should be preserved. The present and future sewage of the town should be kept out of it, and powers should be taken to punish all persons wilfully obstructing or vitiating its waters. Side drains or sewers should be laid to intercept and carry off, to proper depôts, all the refuse of the town, from where, by hose or otherwise, it may be applied to agricultural purposes.

**OPEN DRAINS AND DITCHES IN BILSTON, WILLENHALL, AND WEDNESFIELD.**—All such as receive the privy refuse of houses, or the drainage of the town, should be cleansed, and proper drains



be laid down to take off the liquid and soluble refuse to tanks or wells provided to receive it, from which it may be pumped or passed on to the adjoining land as manure. The whole of the powers described for Wolverhampton, or such of them as may be found requisite, may be applied to the whole of the district; to close all grave-yards now full, and provide cemeteries; to sewer, pave, light, and to cleanse.

**WATER SUPPLY.**—A full supply of pure water is highly desirable. It must be pure, to be healthy; soft, to be economical, and abundant, to be useful. The service should be constant, and at high pressure. Each cottage should have a pipe and tap carried into it, fixed with sink and drain-trap complete.

Time has not enabled me to mature any plan for a general water supply, or fully to examine into the existing means; but abundant evidence was tendered to prove that a great deficiency existed, and there is every reason to believe such a supply as is needed, and which shall be pure and abundant, would be willingly received and paid for.

**ESTIMATES OF SEWERS AND DRAINS.**—*Wolverhampton.* The street-sewers and yard-drains of Wolverhampton may be laid down for a sum not exceeding 20,500*l.*, which, at  $7\frac{1}{2}$  per cent. to provide for contingencies, annual maintenance and repair, and a sinking fund to clear off the whole debt in 30 years, will require an annual sum of 1,537*l.* 10*s.* Add 500*l.* a year for management, and it will make an annual sum of 2,037*l.* 10*s.*, or a rate of about 4*s.* 6*d.* annual upon each house, or a rental of a little more than 1*d.* a week; but as there is other than house property, and property which must necessarily pay for more advantages than are given to a single cottage, the sewer-rate upon houses under 10*l.* rental will not be 1*d.* a week. Estimate for private house and yard-drains, and to furnish a watercloset-pan to each cottage, 23,000*l.* This must be levied as a private improvement rate; and, at  $7\frac{1}{2}$  per cent., would require an annual rate of 1,715*l.*, or a weekly rental upon 9,000 houses of a sum under 1*d.*

*Bilston.*—To cleanse the brook, remove the present obstructions, and put it into a good sanitary state, say 1,000*l.*; sewers and drains, 10,500*l.*; together, 11,500*l.*, which must be levied as a public rate. This, at  $7\frac{1}{2}$  per cent., will require an annual sum of 862*l.* 10*s.* Add 100*l.* a year for management, and the rate in gross will be 962*l.* 10*s.* This, on 4,400 houses, is equal to a rate of about 4*s.* 6*d.* on each house, or a little more than 1*d.* a week rent-charge, if the whole numbers are rated equally. The sum required for private drains, and a watercloset-pan to each cottage, will not exceed 13,000*l.*; or, at  $7\frac{1}{2}$  per cent., 975*l.* as an annual rate; which, as for Wolverhampton, will not exceed 1*d.* a week rental on each cottage.

*Willenhall.*—The estimate for street sewers and drains will not exceed 3,500*l.*, or an annual general rate, as for Wolverhampton, calculated at  $7\frac{1}{2}$  per cent., of 262*l.* 10*s.* Add 75*l.* per annum for superintendence and management, and the gross rate will be 337*l.* 10*s.* ; which, upon 2,100 houses, will be rather under 3*s.* annual rental for each house. The estimate for private drains and soil-pan apparatus will not exceed 4,500*l.*, or, at the percentage as above, 337*l.* 10*s.* per annum, or a yearly rental for each house not exceeding 3*s.* The general rate will be  $\frac{3}{4}$ *d.* a week, and the private rate the same, making  $1\frac{1}{2}$ *d.* a week to each house for both rates.

*Wednesfield.*—The estimate for public sewers and drains will not exceed 1,000*l.*, which, at  $7\frac{1}{2}$  per cent., will be 75*l.* Add 25*l.* for management, and there will be a gross annual rate required of 100*l.* ; which, on 800 houses, will be under 3*s.* a year rental, or less than  $\frac{3}{4}$ *d.* a week on each cottage. The private improvement estimate will not exceed 1,500*l.*, or, as above, an annual rate of 112*l.* 10*s.* ; or, as for the general improvement rate, a rental of about  $\frac{3}{4}$ *d.* a week for each cottage.

These estimates are not given in detail ; but, from minute calculations under the separate heads, and the known cost of similar works, they may be considered as safely within the cost for the whole of the work specified.

**WATER SUPPLY.**—A full supply of water may be furnished to each cottage at a price not exceeding  $1\frac{1}{2}$ *d.* a week rental each house. In Nottingham, Preston, Bury, Carlisle, and throughout a similar district in the Potteries, Stoke-upon-Trent, Hanley and Shelton, Longton, and other towns, hamlets, and villages, a full supply of water is furnished at a cost in no instance exceeding  $1\frac{1}{2}$ *d.* a week ; in several of these places the cost is only 1*d.* a week.

**MANAGEMENT OF WORKS.**—To insure unity of action and economy, the whole of the sanitary works should be under one management, so that one set of offices and officers will perform the whole work. The engineer for Wolverhampton should also be engineer for the formation of sewers and drains throughout the district. The servants of one establishment will serve for all purposes connected with the local management of the works during their progress, and their maintenance afterwards.

The principal portion of Wolverhampton, Bilston, Willenhall, and Wednesfield may be drained with earthenware tile drains, and these may be most advantageously made in the district, as clay is abundant, and coals cheap. But in order to insure the utmost efficiency and economy in the works, and to afford every facility and guarantee for its execution, steps should be taken to provide the best means for the manufacture of the materials, and to organize a body of men to construct the work ; and this will be



best attained by contracts which shall embrace the maintenance of the works in perfect repair after their execution.

**SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS.**—Having fully examined the towns of Wolverhampton, Bilston, Willenhall, and Wednesfield, I would recommend that the Public Health Act be put in force at once, as the only means of removing the evils detailed. The general feeling of the Town Council of Wolverhampton and the ratepayers of the district is strongly in favour of the Public Health Act.

I beg respectfully to lay the following summary before the General Board of Health for their consideration.

1st. That the town and suburbs of Wolverhampton and the towns enumerated, are very unhealthy and particularly liable to epidemic and endemic diseases at all times; that the cholera prevailed in 1832, and may be again anticipated should the town be left in its present condition.

2nd. That the excess of disease may be distinctly traced to close and confined courts, overcrowded tenements, want of sewers or drains, with want of privy conveniences, to a scarcity of good and wholesome water, and to the many public and private nuisances which exist in the most crowded parts of the town, such as undrained and unpaved streets, private slaughter-houses, cow-sheds, stables, pigsties, open middens and (so called) public privies.

3rd. That the money loss in life to the community in labour, and in expenses incurred by sickness and funerals, as contrasted with Penkridge, is 136,509*l*.

4th. That the site of the town of Wolverhampton is highly favourable to health, and that there are no natural causes to prevent the improvement of the several towns, and the whole district named.

5th. That the geological character of the district is also favourable, as coals are abundant and cheap, and every description of building material in the immediate neighbourhood obtainable at reasonable cost.

6th. That the health and comfort of the inhabitants may be improved, and the present heavy charges for poor's-rates may be materially reduced.

1. By a full and constant supply of pure water laid on in every house and in every room-tenement.
2. By a system of sewers laid down in the towns, and of drains properly arranged and taken into every house, back street, court, yard, and alley.
3. By the general adoption and use of water-closets or soil-pan apparatus, fitted up with proper tubular drains to convey away the refuse from each, and by the removal of all liquid refuse in similar drains.



laid at such a depth as shall insure, by means of the same excavation, the perfect drainage of the foundations of all dwelling-houses.

4. By opening out blind courts and alleys, by removing all open middens in confined places, and forbidding their accumulation, by closing all objectionable tenements, by improved paving of all yards, courts, and alleys, by public street lights, and lights in courts and alleys, and by a regular system of surface cleansing with water.

7th. That these objects may be accomplished at the following rates of direct rent-charge for each house and cottage, if paid for weekly, namely :

1. A constant supply of pure water in each house for a little more than one penny per week.
2. A system of complete street and house-drainage, with soil-pan apparatus complete, for one penny to one half-penny a-week.
3. A perfect pavement for courts and yards at one half-penny per week.
4. Cleansing, washing, and watering streets, courts, and footways, and providing public fountains and lights, at one halfpenny a-week.

8th. That the annual rate for these improvements will not exceed *9d.* in the pound, the present poor's-rate being, as shown, *2s. 6d.* for Wolverhampton, *2s. 6d.* for Bilston, *2s. 9d.* for Willenhall, and *1s. 7d.* for Wednesfield, so that the charges for the proposed improvements will be directly a great saving in money, and indirectly a saving beyond calculation of health and comfort.

9th. That a cemetery or cemeteries should be provided, that the existing burial-grounds should be closed, as they are for the most part surrounded with houses, and have become unduly crowded by interments.

10th. That arrangements should be made for the more perfect lighting of the towns and suburbs.

11th. That the refuse of the towns may be applied to agricultural purposes with many advantages, both to the towns and country, tile-pipes will convey it direct to the land upon which it may be distributed in irrigation and by means of hose, and thus the charges named above be decreased, and a fund created for the future improvement of the towns.

CONCLUDING PARAGRAPH.—That therefore the application of the Public Health Act is not only necessary, but will be of the greatest advantage in the district, morally, physically, and pecuniarily, as the benefits will be reaped alike by all. The labourer

will be relieved from much preventible sickness and poverty; the health of all classes will be improved, and the present rates reduced.

I have the honour to be,  
My Lords and Gentlemen,  
Your most obedient Servant,  
ROBERT RAWLINSON.

## APPENDIX.

### A STATEMENT OF THE POWERS EXERCISED UNDER THE PRESENT ACT, AND THE POWERS SOUGHT UNDER THE PUBLIC HEALTH ACT.

#### *Borough of Wolverhampton.*

The Act 54 George III., intituled "An Act for improving the Town of Wolverhampton, in the County of Stafford, and for removing and regulating the Markets in the said Town," is the only Act in force for the improvement of the town, and under it and the Charter of Incorporation, granted a short time since, the government of the town is regulated.

Under this Act, a body of Commissioners was appointed to carry its powers into effect, and the gentlemen forming that body have recently transferred their powers to the Town Council, so that there is now but one governing body in the borough.

The Act does not at present comprise the whole of the municipal borough (which is defined by the township boundary), but extends only over certain portions of the town which are lighted and cleansed under the authority of the Act; but the Commissioners have power to extend the limits of the boundary from time to time, as they deem expedient.

Within the limits of this boundary, which comprises what is termed "*the Town*," the Commissioners pave, cleanse, and repair, by authority of the Act; and, without the limits, the Surveyors of the Highways perform that duty upon such roads as are deemed highways; but those roads without the limits which are not highways are not repaired or cleansed either by the Commissioners or Surveyors of the Highways, and, consequently, are in a most disgraceful state.

The Commissioners have no power to adopt a new street, and undertake the repairs thereof, until three-fourth parts of it is built, consequently there is no control whatever can be exercised on the laying out of the street, or in the levels of the buildings. Every person is allowed to build as he thinks proper, and much irregularity is apparent in every street in the town.

The Act also gives compulsory powers to purchase property, mentioned in the Schedule thereto, for public improvement, and for the purposes of the Act power is given to raise 20,000*l.* by mortgage of the rates.

The Act also directs the levying of a rate on an assessment as follows: Where the rental is 4*l.*, and under 7*l.* per annum, a rate not exceeding 6*d.* in the pound; above 7*l.* and under 10*l.*, 9*d.* in the pound; above

10*l.* and under 15*l.*, 1*s.* in the pound, and so on, increasing with the rent of the property assessed, until it reach the maximum of 2*s.* 6*d.* in the pound.

The 20,000*l.* have been raised and expended, and a rate is yearly levied to the utmost amount allowed by the Act.

If the Public Health Act is applied to the municipal borough, the whole of the highways and streets will be vested in the local Board, and it will consequently repeal those clauses in the Town Act which vest the streets in the Town Commissioners, and direct the manner in which such streets shall be repaired. If this were the only good effected by the application of the Act, it would cause great benefit to the town; at present there is much doubt, and consequent litigation, between the Commissioners, Surveyors of the Highways, and rate-payers, as to their respective liability to repair the streets and roads.

As before stated, certain streets are repaired by the Commissioners; the highways by the Surveyors; and those streets and roads which are not within the limits of "the town," and are not deemed highways, go unrepaired, notwithstanding that the Board of Highways collect a rate from the inhabitants of such streets and roads.

As the Public Health Act must be applied to this borough by Act of Parliament, it would be desirable, if practicable, to take powers by such Act to repeal the present Town Act, and embody such clauses of it as are not repugnant to the spirit of the Public Health Act in such new Act, so that there should be but one Act of Parliament in force.

If this could be done, many additional clauses could be suggested which would be highly beneficial to the town; such, for instance, as powers to erect or purchase a town-hall, market-hall (with power to purchase the market tolls from the present proprietor), corn-exchange, gas-works, water-works, &c., power to make a town-rate on an equal assessment, in lieu of the present sliding scale. It may also be deemed advisable—

To make the limits of the town comprised in the local Act co-extensive for all purposes with those of the municipal borough.

To take compulsory powers of purchasing property for the formation of new streets and other public improvements.

To raise by mortgage of the rates for the above purposes, say, 150,000*l.*

To add more stringent clauses relative to existing nuisances, manufactories of chemical substances, or of articles particularly subject to fire.

If the General Board of Health will state the nature of the additional powers which may be included in the Act, putting the Public Health Act in force within this borough, the Town Council will specify more particularly the several clauses which may be considered necessary and advantageous.

Below is a statement of the number of houses within the town of Wolverhampton, setting forth the scale of rental. The statement is a copy of one made in 1845, and though the number of houses has increased since that time, yet it is presumed the increase is in the same ratio.



*Classification of Houses rated to the Poor in the Township of Wolverhampton, as per Rate granted April 26th, 1845.*

Houses rated from	270 <i>l.</i> to 280 <i>l.</i>	.	.	.	.	1
"	"	210 <i>l.</i> to 220 <i>l.</i>	.	.	.	1
"	"	190 <i>l.</i> to 200 <i>l.</i>	.	.	.	1
"	"	170 <i>l.</i> to 180 <i>l.</i>	.	.	.	2
"	"	160 <i>l.</i> to 170 <i>l.</i>	.	.	.	1
"	"	150 <i>l.</i> to 160 <i>l.</i>	.	.	.	3
"	"	140 <i>l.</i> to 150 <i>l.</i>	.	.	.	3
"	"	130 <i>l.</i> to 140 <i>l.</i>	.	.	.	2
"	"	120 <i>l.</i> to 130 <i>l.</i>	.	.	.	1
"	"	110 <i>l.</i> to 120 <i>l.</i>	.	.	.	4
"	"	100 <i>l.</i> to 110 <i>l.</i>	.	.	.	3
"	"	90 <i>l.</i> to 100 <i>l.</i>	.	.	.	2
"	"	80 <i>l.</i> to 90 <i>l.</i>	.	.	.	16
"	"	70 <i>l.</i> to 80 <i>l.</i>	.	.	.	28
"	"	60 <i>l.</i> to 70 <i>l.</i>	.	.	.	35
"	"	50 <i>l.</i> to 60 <i>l.</i>	.	.	.	30
"	"	40 <i>l.</i> to 50 <i>l.</i>	.	.	.	68
"	"	30 <i>l.</i> to 40 <i>l.</i>	.	.	.	158
"	"	20 <i>l.</i> to 30 <i>l.</i>	.	.	.	341
"	"	10 <i>l.</i> to 20 <i>l.</i>	.	.	.	932

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Total number of houses rated at more than 10 <i>l.</i>	1,632
" " from 5 <i>l.</i> to 10 <i>l.</i>	3,423
" " under 5 <i>l.</i>	2,766

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Whole number of houses rated in the township 7,821

[NOTE.—This statement is upon the amount upon which the houses are actually rated to the poor, and not upon the gross estimated rental, which would be one-eighth more.]

(Signed)

THOS. WALKER, *Town Clerk,*  
*Wolverhampton.*